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Special Games Issue

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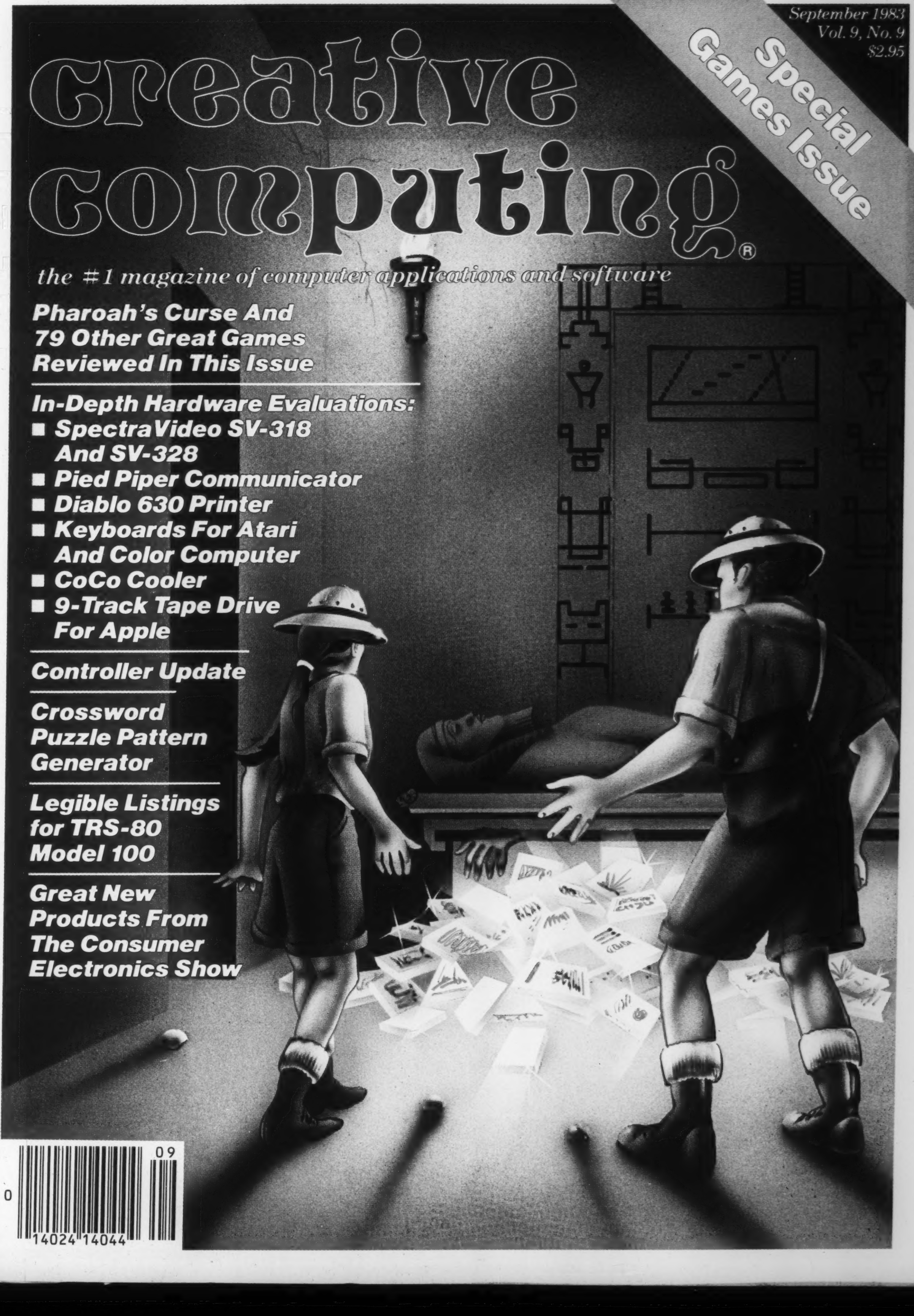

Pharoah's Curse And 79 Other Great Games Reviewed In This Issue

In-Depth Hardware Evaluations:
- SpectraVideo SV-318 And SV-328
- Pied Piper Communicator
- Diablo 630 Printer
- Keyboards For Atari And Color Computer
- CoCo Cooler
- 9-Track Tape Drive For Apple

Controller Update

Crossword Puzzle Pattern Generator

Legible Listings for TRS-80 Model 100

Great New Products From The Consumer Electronics Show

09
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WHILE OTHER COMPUTER COMPANIES ARE BUSY SETTING NEW PRICES,
SPECTRAVIDEO IS BUSY SETTING NEW STANDARDS.

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MSX™ and LOGO™: Two Spectravideo is in Personal

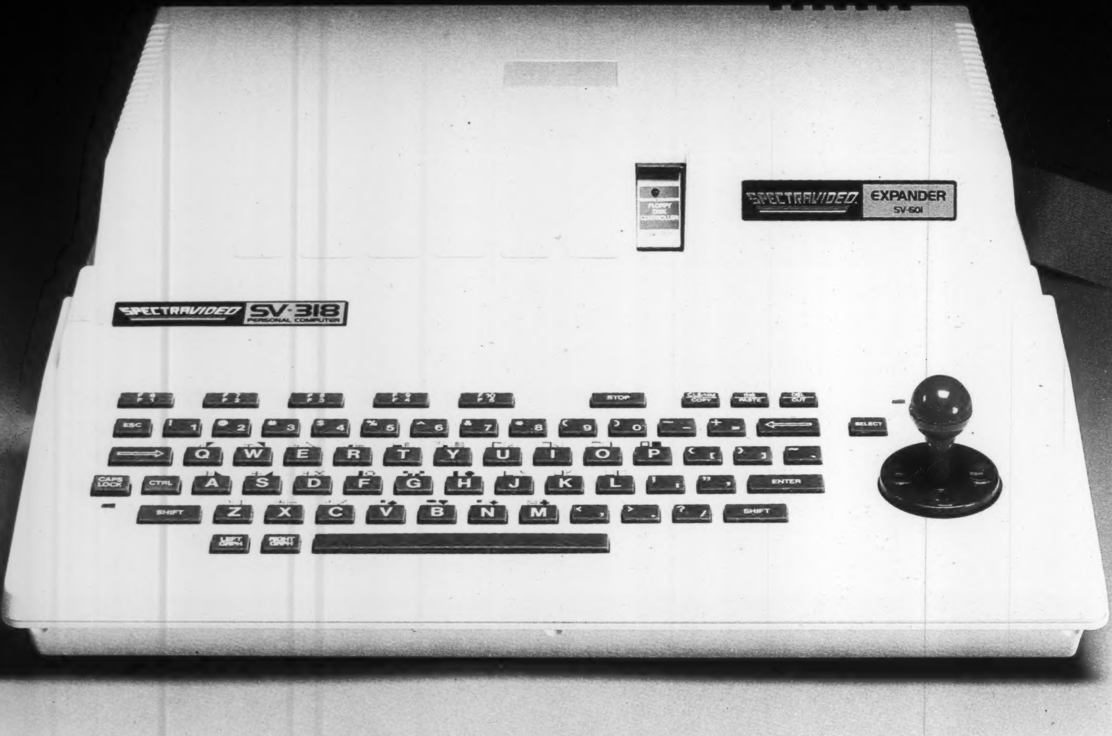
While price wars and confusion reign all around us, Spectravideo goes about its business, setting standards by which all other personal computers will soon be judged. MSX and LOGO are the two latest examples of how Spectravideo is rocking–and reshaping–the personal computer industry.

MSX AND LOGO.

It is now history that, on June 15 1983, Spectravideo, Inc. joined with most of Japan's largest electronics firms to launch MSX: The most far-reaching personal computer standard in history. MSX is the name given to a specific hardware/software configuration that makes product interchangeability possible. While Spectravideo is proud to participate in MSX, we are even prouder of this fact: It was our own SV-318 computer that was used as a prototype for the MSX design! There are two important aspects to this.

First, all future MSX hardware–i.e. computers, peripherals, appliances–will be based on several key design elements of the SV-318. What does this mean to you, the consumer? A great deal, because when you buy an SV-318, you will not only be able to use all of Spectravideo's own software and hardware–you'll also be able to take advantage of all the remarkable new equipment that will be coming from other MSX participants.

In addition, the software aspect of MSX was largely inspired by the software built into the SV-318. From the outset, Spectravideo offered built-in Microsoft BASIC as its resident interpreter. Now, Microsoft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also makes a LOGO program compatible with the SV-318. It was Spectravideo's Microsoft BASIC/LOGO that helped to make MSX possible.

Another standard that Spectravideo can take credit for is the built-in Joystick/Cursor Control. Built right into the SV console, this control is always at fingertips and is much easier and faster to use than external joysticks or conventional editing controls. Certain engineering elements that helped to make this built-in control possible have also been incorporated into MSX.

OTHER STANDARDS OF EXCELLENCE.

While these are the computer standardizations that Spectravideo helped to initiate, they by no means represent the whole SV-318 story. This remarkable computer has also established many standards of excellence that other personal computers now aspire to:

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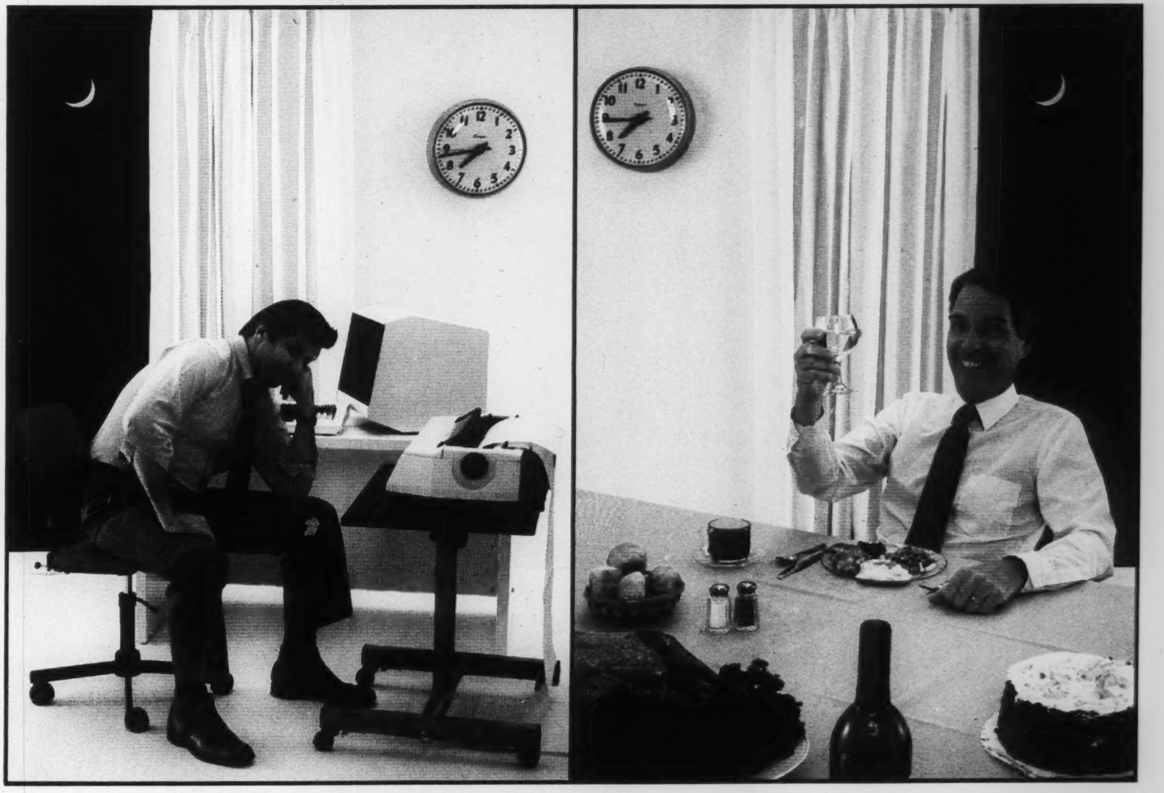

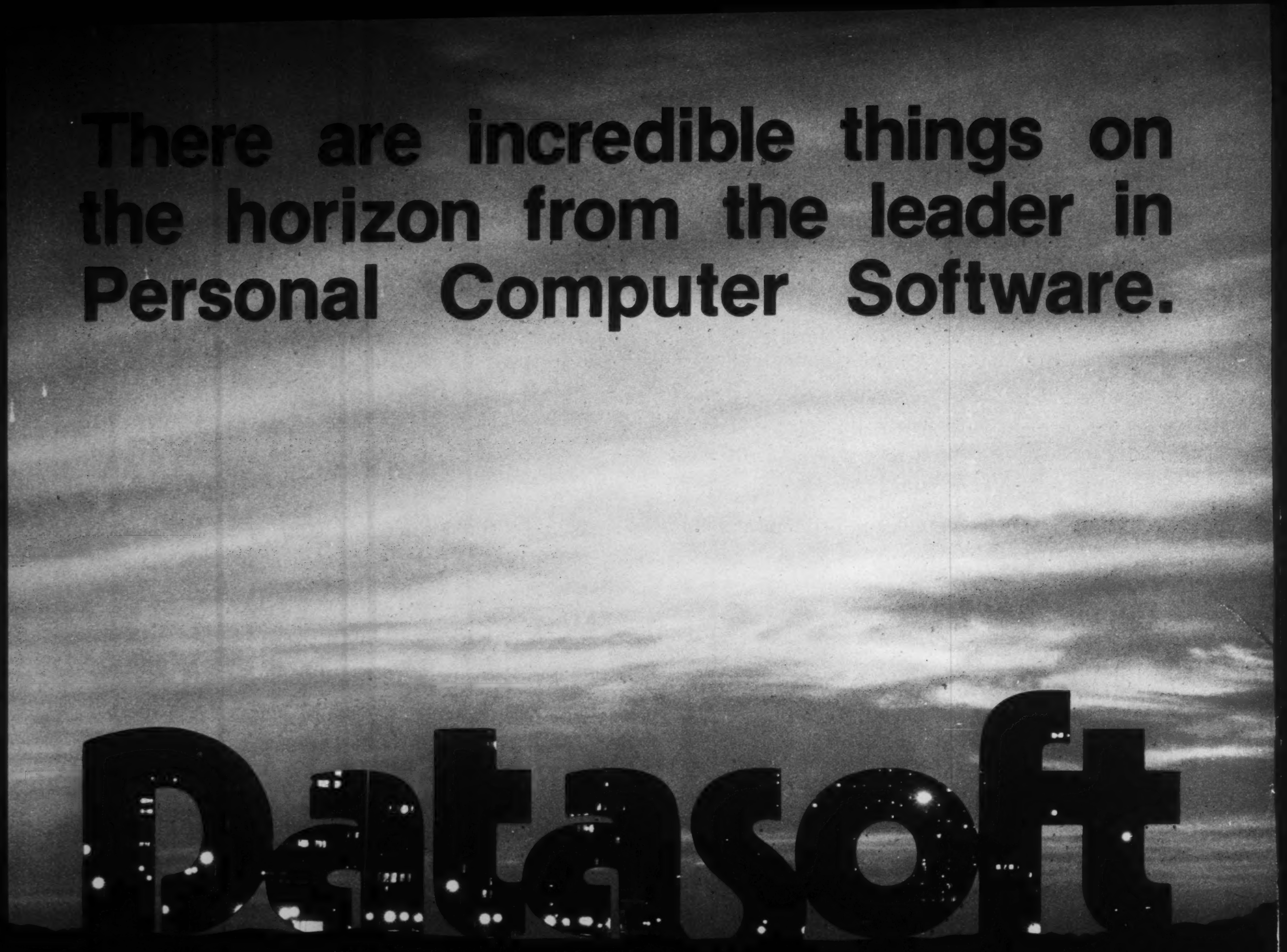
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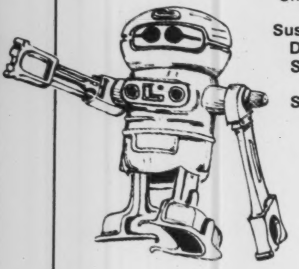

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CIRCLE 210 ON READER SERVICE CARD

tput...input/output...inpu

Morality of War Games

Dear Mr. Ahl:

Re: the War Games blurb in your July "dateline:tomorrow" column. I also enjoyed the film in a general way, but came out of the movie house very disturbed about a specific aspect: the film portrays the very sympathetic and likable young man adroitly and with no moral compunction, entering the computer system of his school and changing his and his friend's grades. Aside from his friend's mild rejoinder of "Isn't that wrong?" this event is treated by the film maker as quite normal behavior for a young computer "hack," and as a result, viewers of the film may and likely will get the impression that such behavior is quite acceptable. Additionally, our "hero" tries to break into the computer of a game company and, of course, this is where the plot then develops into war games. Again, this behavior is not treated as ethically aberrant.

I would think that as the editor of a highly respected computer magazine, you would be concerned about the ethical considerations of the new computer technology and perhaps even address the issue in major articles. As the representative of a major northeastern university, I interviewed a senior high school student last year who told me with candor, alacrity, and absolutely no sense of wrong-doing how proud he was of being able to tap into a local university's computer system and "mess" with course information, grades, etc. When I asked him whether he felt it was wrong in any way to do what he did, his reply was, "No, I look at it as a challenge. There's nothing wrong—everybody tries to do it." Do the film and the student represent the new generation? Something ought to be done before it's too late.

Barry J. Rosenbaum, M.D.
Atlanta Nephrology Referral Center
497 Winn Way, Suite A-210
Decatur , GA 30030

Thanks for your comments with which I wholeheartedly agree.

On another note, the entries have been pouring in as to which issue of Creative Computing *was shown in the movie. Most guesses focused on 1982 issues when Leading Edge was running the distinctive Elephant Disk ad on the back cover. Since the front cover goes by so fast, the giveaway was the Logo Ideas article. The 3-page Jade ad following the article was replaced by the foldout ad for Protovision. And there you have it—September 1982. The first person to correctly identify this issue was Alice Bell of Anderson, CA. Kudos, Alice.—DHA*

Downhill Fast

Dear Editor:

Grout's article in your July 1983 issue about how to load TRS-80 level 2 Basic tapes on a disk system was interesting. Unfortunately, it is in about the same category as an article telling you how to shoot yourself in the foot and then apply first aid. It's much more pleasant to avoid shooting oneself in the foot in the first place.

The entire article could have been replaced by one sentence: Don't load a level 2 Basic tape and then try to boot your DOS; boot your DOS and then load your level 2 Basic tape. Done that way, there is no need for tinkering and fooling around with machine language programs.

I had to look at the cover twice to make sure this wasn't the April issue. Anyone with any reasonable familiarity with the TRS-80 would recognize that this is a non-problem. Next month, are you planning to run an article on how to convert a TRS-80 Model 1 to a 64-character wide screen?

Ronald Tansky
2049 Riverview Lane
Oakford, PA 19047

Wish we could say we were kidding, or that it was only a test for TRS-80 owners. Somehow the piece got through quality control and into the pages of our magazine. We sincerely apologize to our TRS-80 readers, many of whom wrote us with variations on the letter above. It will not happen again, we assure you.—JJA

99/4A Clarifications

Dear Editor:

As managing editor of *99'er Home Computer Magazine*—the only publication of its kind devoted exclusively to the Texas Instruments Home Computer—I was impressed by the fairness of the TI-99/4A review by Fred Gray in your May, 1983 issue. There is, however, one serious error in Mr. Gray's reporting and interpretation. Mr. Gray states that the TI-99/4A with its TMS9918A VDP chip "does not allow the automatic movement feature of the sprites to exist along with the high-resolution capability." This is not true; in fact, the popular TI Command Cartridge, *Parsec*, is a prime example of the simultaneous use of sprite automation and the use of the high-resolution bit-map. The secret is to relocate the sprite velocity table in memory.

One other minor point: In closing, Mr. Gray mentions that the TI-99/4A is sold at a price normally discounted to less than $300. I would like to supplement this with an update. As of June 1, with the recent price decrease and $50 rebate, a TI-99/4A can be purchased for less than $100, making it an even more "astounding value."

David G. Brader
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The Secretary

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CIRCLE 253 ON READER SERVICE CARD

tput...input/output...inpu

Mnemonic Plague

Dear Editor:

After reading Dr. Enlander's letter in Input/Output March '83, I decided to write because I need similar help.

In spring last year I got tired of reinventing wheels, looking for table A in book B, and searching through magazine X to find subroutine Y. So I started to compile material for a Level II Basic Programmer's Dictionary. If you convert programs from one Basic dialect to another, Dr. Lien's *Basic Handbook* is a great help, but what can you do if you need a reference list of 6502 assembly language mnemonics, memory addresses of screens from various computers, the meaning of control codes or just a handy, little subroutine in Level II Basic? The only solution so far is sitting atop a huge pile of books, manuals and magazines—permanently seeking specific information.

Although I accumulated a lot of information and many subroutines, the amount of missing material is still large. That's why I would like to ask the readers of *Creative Computing* for help.

What I am looking for is system and language information (memory maps, language references, screen formats, special ASCII and control codes, graphic, etc.) of various computers (e.g. Vic, CBM, OSI, Apple, Dragon 32, ZX81, Spectrum, BBC, Atari, Tandy CC, PC, etc.) to compile lists for program conversion, short Level II Basic programs, machine language routines, and any kind of special programming technique or trick for the TRS-80 and PMC computer. If anybody wants to help me with this project, please send me a letter, a listing, or a cassette.

Many thanks in advance for your kind assistance.

Marvin C. Stahl
30 Buelow St.
1000 Berlin 30
West Germany

Insane Prices

Dear Editor:

Last year we decided to take the copy-protection off of our graphics utilities. We thought it was the right thing to do, although we weren't quite sure how wise it was. A lot of people around the industry questioned our sanity, and wished us luck. But it worked, and now here we go again.

We've started publishing games and looking more carefully at that area of the market. We priced ours at $30 to $35 because everyone else did, and they sold fairly well. But wait! Wasn't $30 the going price for a game three or four years ago when there were fewer than 100,000 Apples sold? Yes, but the packaging has gotten more fancy, hence more expensive, and advertising costs have risen dramatically, so maybe that's what one has to charge to recoup the initial investment. But then again, $30-40 seems a little expensive for a *game*. Games should be for fun. You shouldn't have to empty your wallet each time you buy one.

A lot of people are going to question our sanity again, but by unanimous agreement among the Penguin Software staff and authors, we're going to try pricing our games at $19.95. From the reactions of the retailers and customers we've talked to, we think we'll sell more than enough to make up for the decreased money per game. We're going to try it for six months as an experiment, and if we're right, it will continue.

Mark Pelczarski, President
Penguin Software
830 4th Ave.
Geneva, IL 60134

Tales from the Crypt

Dear Editor:

Your May 1983 was, as usual, a great issue. You are a bit redundant though. You should not have to say "In-Depth Reviews" for it is well known, by now, that your reviews are the deepest and most revealing!

The special coverage on cryptology was good for it spoke to the user's needs, not to his fears. We believe cryptology can assist a microcomputer user if that user is aware of just what cryptology is about. Your features served that end well. Gordon Ritchie's, "The Secret Code Machine," on the Playfair Cipher with its historical prelude before the program was nicely done. We should like to call the readers' attention to two other books which will serve them well, *Elementary Cryptanalysis* by Helen Fouche Gaines, a Dover paperback, and *Cryptanalysis for Microcomputers* by Caxton C. Foster, a new Hayden paperback.

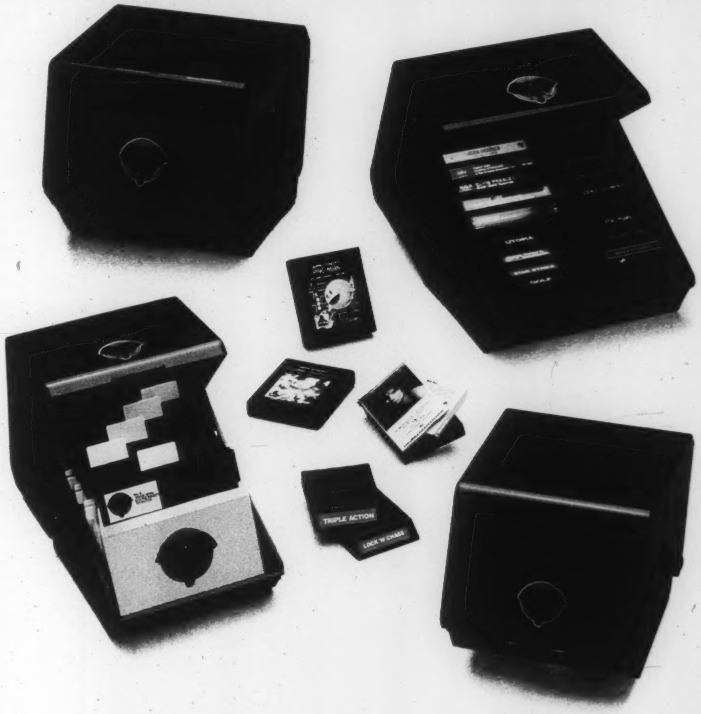
Of course we believe we have a unique source in the publication of our scholarly journal, *Cryptologia*, now in its seventh year. Readers may write for details. However, with the current interest in cryptology being high we should like to call attention to our Third Annual Undergraduate Paper Competition in Cryptology which has a prize of $300. Entries are due January 1, 1984, and the winning paper is published. We shall be glad to supply more details.

Keep up your good work in showing just how computers touch many aspects of our lives and how we can better deal with them.

One closing comment: We produce *Cryptologia* and our new journal *Collegiate Microcomputer* on a microcomputer using *WordStar*. It was with the advice and reviews of your good editors some three years ago that we purchased the NEC Spinwriter over all other letter quality printers to prepare our camera ready copy. It does an outstanding job and we have had no trouble with it since then. Thank you for the good reviews and the solid advice.

Brian J. Winkel, Editor
Collegiate Microcomputer
Terre Haute, IN 47803

TRUNKS FOR THE MEMORIES.



Introducing the most logical place to store Elephant Memory Systems® (or lesser brands of disks): The Trunk.

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Marketed exclusively by Leading Edge Products, Information Systems and Supplies Division, 55 Providence Highway, Norwood, MA 02062. Dealers: Call toll-free 1-800-343-8413; or in Massachusetts, call collect (617) 769-8150.

CIRCLE 188 ON READER SERVICE CARD

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Applefest/San Francisco

Applefest/San Francisco, will be held Friday through Sunday, October 28-30, 1983, at the Moscone Center in San Francisco. Apple-compatible products, including hardware and software, will be on display and for sale at over 300 displays and booths.

The Applefest Conference Program features seminars, tutorials, application workshops, advanced user workshops, and software/hardware spotlights. Special happenings at Applefest include: an Open Forum with Steve Wozniak, one of the founders of Apple Computer, Inc., and a panel discussion with leaders in the software field on "The Great Software Piracy Debate."

Northeast Expositions, 822 Boylston St., Chestnut Hill, MA 02167; (800) 841-7000 or (617) 739-2000.

An Apology

We apologize once again to our TRS-80 readers for the publication of "Conversions are Downhill with Upgrade" in our June issue (see I/O for details).

Once in a while we do manage to foul up, and when we do, we do a good job of it. This was about the topper.

Our TRS-80 quality control has been bolstered, and no repeats of the incident will occur.

Next month: a 40-column display for the Atari!

National Computer Conference

A Call for Papers, Sessions and Suggestions has been issued for the 1984 National Computer Conference, to be held July 9 through 12, 1984 in Las Vegas, NV.

You may participate in the Twelfth Annual NCC by writing a paper or organizing and leading a session. The deadline for submission of papers is October 31, 1983 and the deadline for final session proposals is August 30, 1983. A preliminary proposal (title, abstract, target audience) is required and must be approved before final proposals will be accepted. All authors and session leaders will receive final notification of acceptance by January 31, 1984.

Submissions, proposals, correspondence and inquiries should be sent to:

Dennis J. Frailey, Program Chairman
Texas Instruments Incorporated
8642-A Spicewood Springs Rd.
Suite 1984
P.O. Box 10998
Austin, TX 78766
or call (512) 250-6663.

The theme of the 1984 National Computer Conference, Enhancing Creativity, reflects the increasing personalization of computer systems, and the attendant focus on individual productivity and innovation.

Corrections

We have received the following corrections from Kel Hess for his article "Computers Against Crime" (May, 1983).

In the listing on page 163, Line 50 should read:

IF INP(255)AND128THEN40

In Lines 210, 230, 290, and 340 change OUT255,11 to OUT237,15

In lines 220, 270, and 350 change OUT255,11 to OUT 237,13

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The disks listed below are 5 1/4", single sided, double density (except as noted), unlabeled, with hub reinforcement ring. Other disks are available, call for details.

3M	**$165** per 100
MEMOREX	**$165** per 100
NASHUA	**$160** per 100
NASHUA (single density)	**$140** per 100
VERBATIM	**$190** per 100

Without sleeves: add $2.50 shipping per 100.

With tyvek sleeves: add $7 plus $2.50 shipping per 100.

Packed in boxes of 10 with tyvek sleeves: add $15 plus $3.00 shipping per 100.

To err is human. To forgive is SAVVY.™

With SAVVY™ you can misspell, mistype or rephrase and still command your computer.

If you're tired of inflexible personal software, it's time to get SAVVY.

SAVVY teaches your computer to adapt to you. It's part hardware, part software, and part remarkable. It lets your computer see things as you see them. Do things the way you like to do them. It even allows for those unavoidable entry errors that we all sometimes make.

What's the secret? SAVVY can recognize patterns (other software products can only recognize exact duplicates) and you can teach it to recognize your language. That means it will carry out your commands instead of flashing "error" messages.

Whether you want SAVVY to teach yourself programming, to run your business applications or to develop drills for students, there's a version of SAVVY to suit your needs and your budget. It's a database system, file manager, natural language programmer, and an operating system, all in one. SAVVY operates on Apple II Plus® and IIe® computers as well as Apple-compatibles.

Call 800-551-5199 to arrange for a demonstration at your local dealer.

SAVVY is a product of Excalibur Technologies Corporation, 800 Rio Grande Boulevard N.W., Mercado 21, Albuquerque, New Mexico 87104.

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CIRCLE 156 ON READER SERVICE CARD

Creative Computing Street Price Index

This is the second month for the Creative Computing Street Price Index. It is an on-going monitor of the average price levels of selected computers, peripherals, video games and related accessories in the real-world marketplace. The list price is the price set by the manufacturer for the product when it was first announced and is not necessarily the current manufacturer list price.

As time goes on, this Index will be presented in graphic form, but until there are six or seven data points, a graph would be of little value.

This Index is not intended to be a purchasing guide. Frequently, the lowest price for a computer will be offered by a vendor who is going out of business or closing out that particular item. Unless you are convinced you will never need service or are skillful enough to repair an unhealthy computer yourself, you would probably not want to buy a machine from such an outlet.

Furthermore, most of our price monitoring is done in major metropolitan areas on the two coasts. Prices outside of large cities and in the central part of the country are usually higher.

Computer	Orig List Price	July 1983 ....Monthly.......... High	Low	Average	Month Ago	Year Ago
Apple IIe (64K, 40-col)	1395	1395	1175	1285	1285	n/a
Atari 400, 16K	559	259	69(1)	164	178	352
Atari 800, 48K	999	549	325(1)	437	460	863
Atari 1200, 64K	899	679	409(1)	544	610	n/a
Commodore Vic-20	297	149	79	114	116	274
Commodore 64	599	399	199(1)	299	344	n/a
Osborne 1, 64K	1795	1795	1187	1492	1492	1895
Radio Shack:						
Color Comp, 16K	399	199	199	199	249	399
Model 4, 64K	999	999	999	999	n/a	n/a
TI 99/4A, 16K	635	269	89(1)	169	174	299
Timex 1000, 2K	99	65	29	43	46	149
Average home computer (up to 16K)	398	208	94	151	154	295
Line Printer						
Epson FX-80	699	695	565	630	630	n/a
Epson MX-80FT	745	505	395	450	467	567
NEC PC-8023A	795	499	399	449	467	599
Okidata 82A	799	459	380	420	420	549
Okidata 92	699	599	489	544	544	n/a
Star Gemini 10	449	399	299	359	369	n/a
Average 80-col dot matrix printer	697	526	421	473	482	572
Video Games						
Atari 2600	199	99	69(1)	84	84	149
Atari 5200	269	200	155	178	178	n/a
Colecovision	199	189	135	162	162	n/a
Intellivision II	199	150	79(1)	115	115	189
Average video game	216	145	109	127	127	169

Dynamic Memory Chips (200 ns, quantity 8)

				...Lowest....	
16K x 1 bit (4116) ...	1.95	1.50	1.73	1.50	1.56
64K x 1 bit (4164) ...	7.49	5.95	6.72	...	n/a

(1) Includes a manufacturer rebate or equivalent

EARLY GAMES
FRACTION FACTORY
EARLY GAMES
MATCHMAKER
EARLY GAMES
PIECE OF CAKE
EARLY GAMES
MUSIC
EARLY GAMES
YOUNG CHILDREN
EARLY GAMES

THE BEST REASON FOR HAVING A HOME COMPUTER.

Your children. That's why we created the Early Games series for them. We're educators as well as computer specialists. We create games that teach children important skills.

There are five programs in the Early Games series. **Early Games for Young Children** is a set of nine entertaining activities for children 2½ to 6. They can work with numbers and letters and create colorful pictures. **Matchmaker** uses shapes, sizes, directions and colors to help children develop reading readiness skills. Children ages 5 to 12 can learn to play melodies with Early Games **Music.** Our **Piece of Cake** turns math problems into, well, a piece of cake. And **Fraction Factory** takes the work out of fractions.

Early Games feature multiple activities, easy to use picture menus, and colorful graphics. The games are fun, children love to play them! That's why they learn from them.

And they're the best reason for having a home computer.

CSI

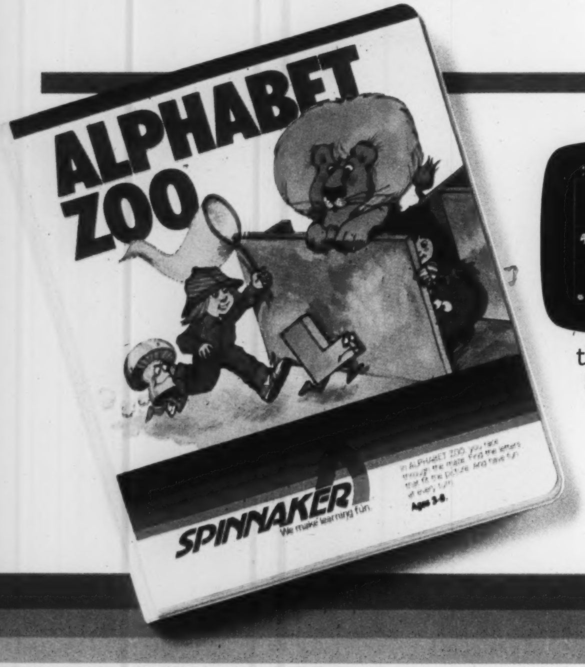
counterpoint software inc.

SPINNAKER'S LINE OF EARLY LEARNING GAMES IS GROWING AS FAST AS YOUR CHILD'S MIND.

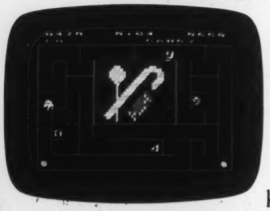
Watching your kids grow up is a lot of fun. But making sure their minds grow as fast as their bodies is even more rewarding. That's where we can help. With a growing line of Early Learning Programs that are not only lots of fun to play, but also educational.

Some of the games you see on these two pages help exercise your child's creativity. Others help improve vocabulary and spelling skills. While others improve your child's writing and reading abilities. And all of them help your child understand how to use the computer.

So if you're looking for computer programs that do more than just "babysit" for your kids, read on. You'll find that our Early Learning Programs are not only compatible with **Apple,® Atari,® IBM®** and **Commodore 64™** computers, but also with kids who like to have fun.


ALPHABET ZOO
In ALPHABET ZOO you race through the maze. Find the letters that fit the picture. And have fun at every turn.
Ages 3-8.
SPINNAKER
We make learning fun.

A trip through Alphabet Zoo.



It's a race. It's a chase. It's Alphabet Zoo, the exciting game that will have your kids zipping through the maze, after letters that fit the picture on the screen.

And at the same time, your kids will be learning the relationship of letters and sounds, and sharpening their spelling skills. So they'll be laughing and learning at every turn.

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STORY MACHINE
SPINNAKER
We make learning fun.

The story of STORY MACHINE.™ Ages 5 to 9.

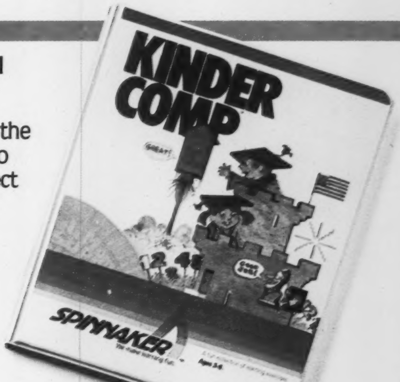
STORY MACHINE is like a storybook come to life. Using the keyboard, your children write their own fun little stories. The computer then takes what they've written and animates their story on the screen, complete with full color graphics and sound.

STORY MACHINE helps your children learn to write correctly, become familiar with the keyboard, and lets them have fun exercising their creativity at the same time.

KINDERCOMP.™ Numbers, shapes, letters, words and drawings make fun. Ages 3 to 8.

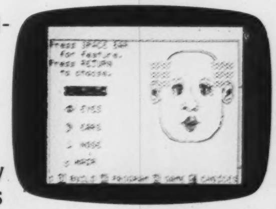
KINDERCOMP is a game that allows very young children to start learning on the computer. It's a collection of learning exercises that ask your children to match shapes and letters, write their names, draw pictures, or fill in missing numbers. And KINDERCOMP will delight kids with colorful rewards, as the screen comes to life when correct answers are given.

As a parent, you can enjoy the fact that your children are having fun while improving their reading readiness and counting skills.


KINDER COMP
GREAT!
SPINNAKER
We make learning fun.

FACEMAKER
SPINNAKER
We make learning fun.

FACEMAKER™ makes faces fun. Ages 4 to 12.


Press SPACE BAR for feature.
Press RETURN to choose.
EYES
EARS
NOSE
HAIR

FACEMAKER lets children create their own funny faces on the screen. Once a face is completed, your children will giggle with delight as they make it do all kinds of neat things: wink, smile, wiggle its ears, or whatever their imagination desires.

Plus, FACEMAKER helps children become comfortable with computer fundamentals such as: menus, cursors, the return key, the space bar, simple programs, and graphics. FACEMAKER won't make parents frown because their children will have fun making friends with the computer.

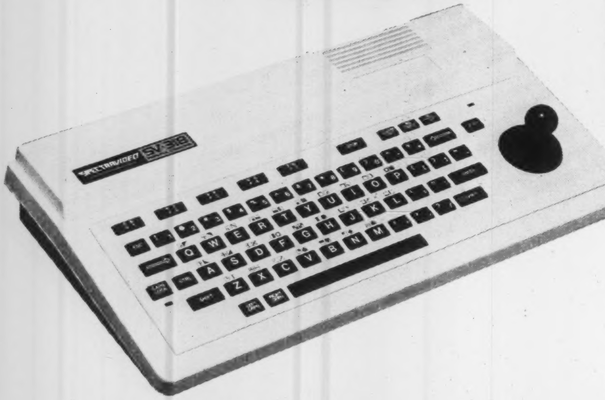
SPINNAKER™
We make learning fun.

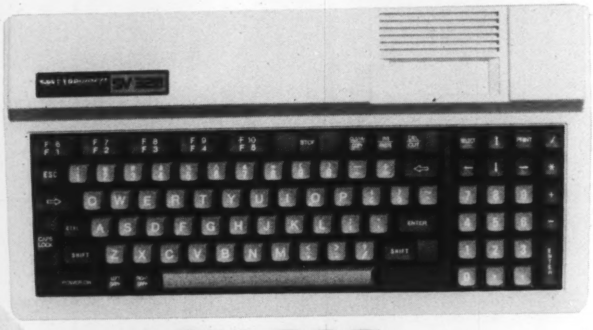
Disks for: Apple, Atari, IBM, Commodore 64.
Cartridges for: Atari, Commodore 64

CIRCLE 242 ON READER SERVICE CARD

creative
computing
equipment
evaluation

SpectraVideo SV-318





and SV-328

David H. Ahl

The SpectraVideo family of computers is an interesting international effort. Overall management, marketing, and direction come from the company headquarters in New York; systems software development including the powerful implementation of Microsoft Basic was carried out by ASCII Microsoft in Tokyo; while the manufacturing is done in Hong Kong. The SV-318 and SV-328 are the products of this unusual, but highly successful three-way marriage.

While this is a review of both machines, we will generally speak of the computer (singular) and point out the differences between the two models (built-in memory and keyboard) in the appropriate places.

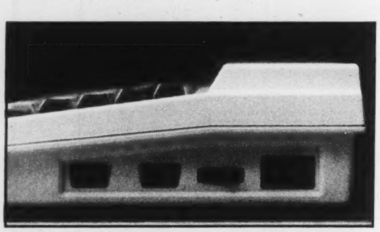
Functional Console

The computer is housed in a sturdy white plastic case measuring 15.5" x 8.7" which slopes from a height of 1.7" at the front to 3" at the rear. Immediately visible on the top of the case is the keyboard and a red LED indicating that the power is on. Although a small feature, this is much appreciated; so many computers today provide no indication of whether they are on or off.

Also on top of the case is a hinged cartridge port in which to plug in software packages that come in cartridge form.

Moving to the right side, we find a male 4-prong power supply input. The power supply is a heavy duty unit providing 14 volts at 2 amps and 8 volts at 3 amps. This is three to four times the power offered by the average home computer power supply; thus it ought to more than enough reserve power for all the peripherals you may ever want to add.

Rear of computer has bus expansion slot, cassette slot and video jack.



Right side of SV-318 and SV-328 has two joystick ports, on/off switch, and power receptacle.

Also on the right side are a rocker-type off-on power switch and two game controller ports. These are standard DB-9 receptacles for Atari-type joysticks, paddle controls, and track balls.

On the back of the console are an expander port, cassette port and video output port. An RF modulator furnished with the system plugs into the video port and, according to the specs, will produce NTSC, PAL or SECAM output as appropriate. It uses a standard 5-pin, 180-degree DIN connector which can be easily wired to provide a composite video signal to a monitor with separate audio output.

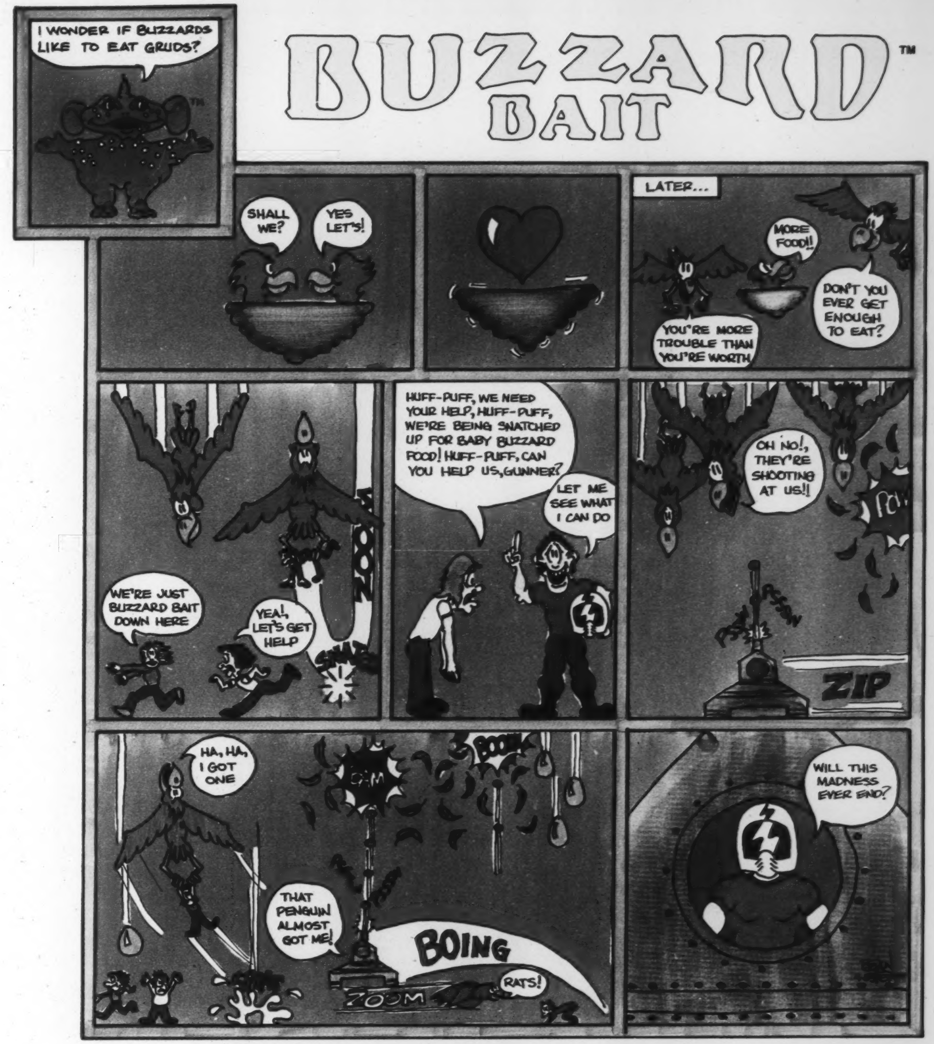
The cassette port connects to the SpectraVideo stereo data/audio cassette recorder. The computer has lines for sending and receiving data, motor control, and power.

The expander port allows the computer to be connected to a single slot expansion adapter or a 7-slot expansion box. More about this later.

A Complete Package

The attractive box contains nearly everything you need to start computing. You get the computer/keyboard unit, RF modulator (with 3' cable), shielded video cable (5'), video switch box, power

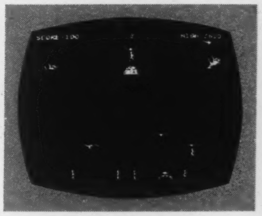
BUZZARD™ BAIT


I WONDER IF BUZZARDS LIKE TO EAT GRUDS?
SHALL WE?
YES LET'S!
LATER...
MORE FOOD!!
DON'T YOU EVER GET ENOUGH TO EAT?
YOU'RE MORE TROUBLE THAN YOU'RE WORTH
WE'RE JUST BUZZARD BAIT DOWN HERE
YEA!, LET'S GET HELP
SNAP
HUFF-PUFF, WE NEED YOUR HELP, HUFF-PUFF, WE'RE BEING SNATCHED UP FOR BABY BUZZARD FOOD! HUFF-PUFF, CAN YOU HELP US, GUNNER?
LET ME SEE WHAT I CAN DO
OH NO!, THEY'RE SHOOTING AT US!!
POW
ZIP
HA, HA, I GOT ONE
BOOM
THAT PENGUIN ALMOST GOT ME!
BOING
ZOOM
RATS!
WILL THIS MADNESS EVER END?

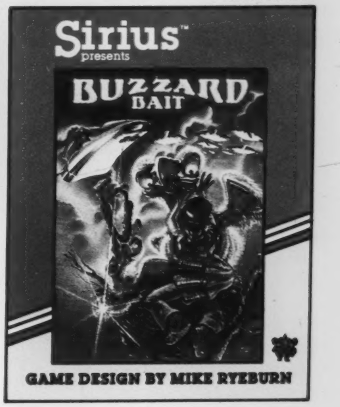
© 1983 Sirius

Sirius™

For more information contact your local Sirius dealer or contact Sirius directly at 10364 Rockingham Drive, Sacramento, CA 95827; (916) 366-1195.



Apple II, II+ & IIe Disk
IBM-PC Disk


Sirius™ presents
BUZZARD BAIT
GAME DESIGN BY MIKE RYEBURN

Game design by Mike Ryeburn.
IBM-PC version programmed by Uriah Barnett.
Package, program and audio visual © 1983 Sirius Software, Inc. All rights reserved.

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CIRCLE 227 ON READER SERVICE CARD

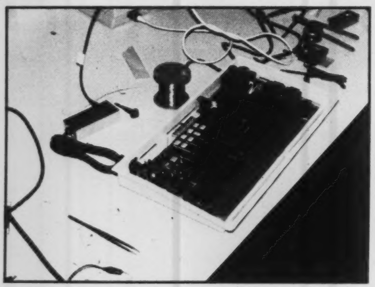
supply, instruction manual, and warranty card.

The manual has eight pages of photos depicting all aspects of hooking up the system and getting it into operation. Another helpful feature is the built-in diagnostic check that automatically occurs upon powering up the system. A successful self-test is signaled by a beep in the TV speaker about 1-1/2 seconds after turning on the power switch.

Upon a successful power up, the SpectraVideo logo appears in three colors followed by a message indicating the version of Microsoft Basic in the system and the number of free bytes of user memory. A standard SV-318 has 32K of RAM; 16K is allocated to graphics support and the other 16K is user addressable memory. Well, not quite; 3569 bytes are reserved for overhead, I/O, and the like. Thus an unexpanded 16K SV-318 has about 12.8K truly usable bytes and a standard 32K SV-328 machine has 29.2K. Both computers are expandable, with 16K or 64K external memory packs, to a maximum of 256K.

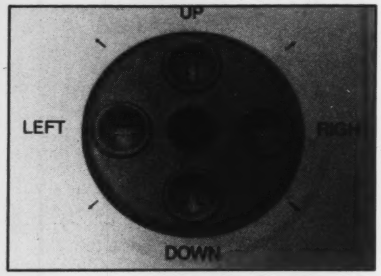
Computer/Keyboard Unit

The SV computers use the Z80A mpu chip operating at 3.6 MHz; until recently, most personal computers used a 2 MHz clock rate. In theory, this should make the SV computers faster than other comparable machines. In practice, the issue of speed is somewhat more complicated.



Guts of an SV-318 at the plant in Hong Kong.

The version of Microsoft Basic used by the SV computers automatically makes all variables double precision. Hence, a variable occupies eight bytes, and every time it is called, those eight bytes must be moved. In contrast, most other small computers use single precision variables (four bytes) so there are correspondingly fewer memory accesses when a variable is called. The bottom line is that in a normal Basic program, the SV computers are considerably more accurate than, say, the Mattel Aquarius or TRS-80 Model 4, but only about half as fast. A slight improvement in speed (about 10%) can be obtained by defining variables as single precision.



SV-318 has a cursor directional pad.

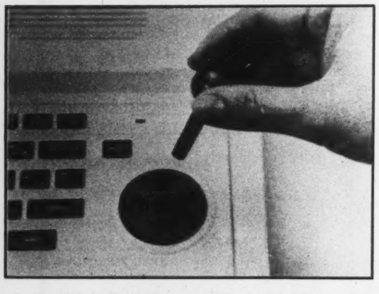
On the other hand, the speed advantage is apparent when using machine code. Also, as we will see later, the inclusion of several powerful Basic and graphics commands makes programming much simpler, particularly for animated graphics. This may yield a speed advantage as well, since one command does the job of many.

The keyboard on the SV-318 has 71 rubberized Chiclet-style keys. In addition to the expected alphabetic, numeric, and symbol keys, the keyboard has five function keys, three program control keys (STOP, ENTER, and CONTROL), and six miscellaneous keys.

SPECTRAVIDEO
SV 328
F 6 F 1
F 7 F 2
F 8 F 3
F 9 F 4
F 10 F 5
ESC

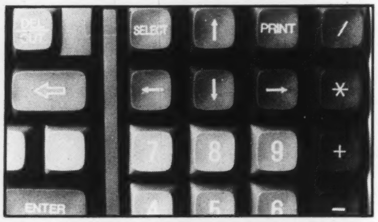
Each of the five function keys can select two functions.

Each of the five control keys activates two functions depending upon whether SHIFT is pressed. The function of each of these keys is shown on the bottom of the TV display. The functions controlled by these keys are color (to set character, border, and background colors), auto line numbering, list (the entire program or the last line you were working on), run, cassette load, GOTO (allows execution of a program from any point), and continue. In addition, all ten of the function keys are user programmable with a simple statement, for example, KEY 1, "Creative". From then on, whenever function key 1 is pressed, the word Creative will automatically appear.



A joystick handle can be added to the cursor directional pad on the SV-318.

The six miscellaneous keys are caps lock, clear screen and move cursor to home position, insert, delete, and left and right graphics. These last two keys are used to select the 52 graphic symbols on the keyboard (each of the 26 letters can produce two graphics symbols).



SV-328 has arrow keys for cursor movement.

To the right of the keyboard on the SV-318 is a joystick/cursor control pad. A joystick may be screwed into the center of the pad for use in games or to move the cursor around the screen in any of eight directions. Actually, we found it most convenient to move the cursor by pressing the indentations in the pad rather than using the joystick at all.

The feel of the keyboard was as good as could be expected from the Chiclet-style keys. With each keypress, an audible keyclick sound is produced in the TV speaker to aid in accurate typing. This can be turned on or off with the commands CLICK ON or CLICK OFF.

The SV-328 differs from the SV-318 in that it has a full-stroke keyboard with 86 keys. In addition to the keys on the SV-318, the SV-328 has a numeric keypad and arithmetic function keys to the right of the main keyboard, and the cursor control pad is replaced by four directional keys. The keyboard has an excellent tactile feel, and we had no need to leave the keyclick sound on.

Extended Microsoft Basic

The version of Microsoft Basic in the SV computers is one of the richest we have ever seen. As mentioned earlier, all variables are automatically double precision unless specified otherwise in your program. This yields 16.8 decimal digits of accuracy which beats hands down any computer that we have tested with the exception of the calculator-like TI CC-40.

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CIRCLE 211 ON READER SERVICE CARD

The computer has four types of variables: double precision, single precision, integer, and string. A variable type can be declared at the beginning of the program (DEFSNG, DEFINT, etc.) or by means of a suffix attached to the variable name (I%, B!, F#, A$).

There are 26 Basic commands. These include the usual NEW, RUN, SAVE, and the like, but we found a number of unusual commands as well.

KEY LIST lists the contents of the programmable function keys. MERGE brings a second program into memory and merges it with the one already there; if there are duplicate line numbers, the second program takes precedence.

MOTOR ON or OFF turns the cassette motor on or off while SOUND ON or OFF turns the cassette audio track on or off. SWITCH causes the computer to use a different memory bank. WIDTH sets the width of the screen display and TRON and TROFF turn the trace function on and off.

An extended list of 29 Basic statements includes BEEP and SOUND (R,B) which puts a sound byte, B, into one of the three sound registers, R. Control of the three sound channels is extensive and includes pitch (over eight octaves), amplitude, envelope period, envelope shape, and rhythm. In addition, there is a noise generator. To take full advantage of this sound capability, the SV computers include a Music Macro Language with 11 additional commands.

Other extended Basic statements include SWAP (exchanges the value of two variables), WAIT (suspends program execution to read an input port), OUT (puts a byte to an output port), DEF USR (defines an entry address for a machine language subroutine), and ERASE (releases space used by a variable array).

The Basic operators include the expected arithmetic and Boolean operations. In addition, we find MOD (integer modulus), XOR (exclusive OR), EQV (equivalence), and IMP (implication). The arithmetic functions are what would be expected; however, SpectraVideo has thoughtfully provided in the User's Manual a table of 20 inverse and hyperbolic functions not directly implemented on the computer, showing the formula to calculate each one.

Again, the string functions are more or less as expected with the addition of HEX$ and OCT$ (converts numbers to hexadecimal and octal strings), and STRINGS$ (L,E) which returns a string of L length with the numeric value specified by expression E.

The I/O and interrupt control functions and commands are fascinating and allow amazing control of printers, terminals, joysticks, and other I/O devices. The SV computers have a built-in timer which can be accessed from Basic programs to perform all kinds of tricks. We were especially interested in the statement ON SPRITE GOSUB which causes the program to jump to an address when it detects a collision between two sprites.

Sprites are little graphics critters which can consist of up to 32 bytes which define colors and pixels on the screen (rockets, tanks, people, or any moving object). A program can use up to 32 sprites, many more than are available in other comparably priced computers. Unfortunately, neither the User's Guide nor the Quick Reference Guide included with the computer describes how to use sprites in a program. (*Creative Computing* had a multi-part tutorial on the use of sprites about a year ago.)

In addition to the various sprite commands, the SV computers have many other graphics statements which make graphics programming a real joy. These include CIRCLE, LINE, GET, POINT, PSET, VPEEK and VPOKE (peek and poke to video screen locations), and DRAW. This last command is used to draw on the screen with a special graphics macro language which has 14 additional commands.

On-Screen Editing

More and more computers are being produced today with on-screen editing to replace the older systems which required an entire statement to be retyped or a special editing function to be invoked. With on-screen editing, you simply move the cursor to the place requiring a change, type the change, press RETURN, and presto, the change is made. Good on-screen systems include insert and delete keys, and allow the duplication of statements by simply typing a new line number over the old one; the SV computers have these features.

In addition, the SV computers have several other editing and cursor movement functions which are invoked by pressing the CONTROL key in combination with a letter. Some of these functions include backspace-and-delete, cursor to end of line, truncate line (a real joy!), and clear logical line.

The only "missing" editing command that we would like to have seen is Line Insert; however, the only low cost computer on which we have found this command is the Panasonic JR-200.

Graphics Display

As mentioned earlier, the SV computers can drive either a color monitor or a TV set with an RF signal. Naturally the image on a monitor is better, but the computer produces a surprisingly good image on a TV set. Up to 16 colors can be produced simultaneously, although some of them tend to appear very similar. On the other hand, it is rare to want 16 completely different colors on the screen at one time.

The default color for text is a highly legible white on blue, although by means of the color command you can set this to anything you desire.

Normal text resolution is 40 charac-

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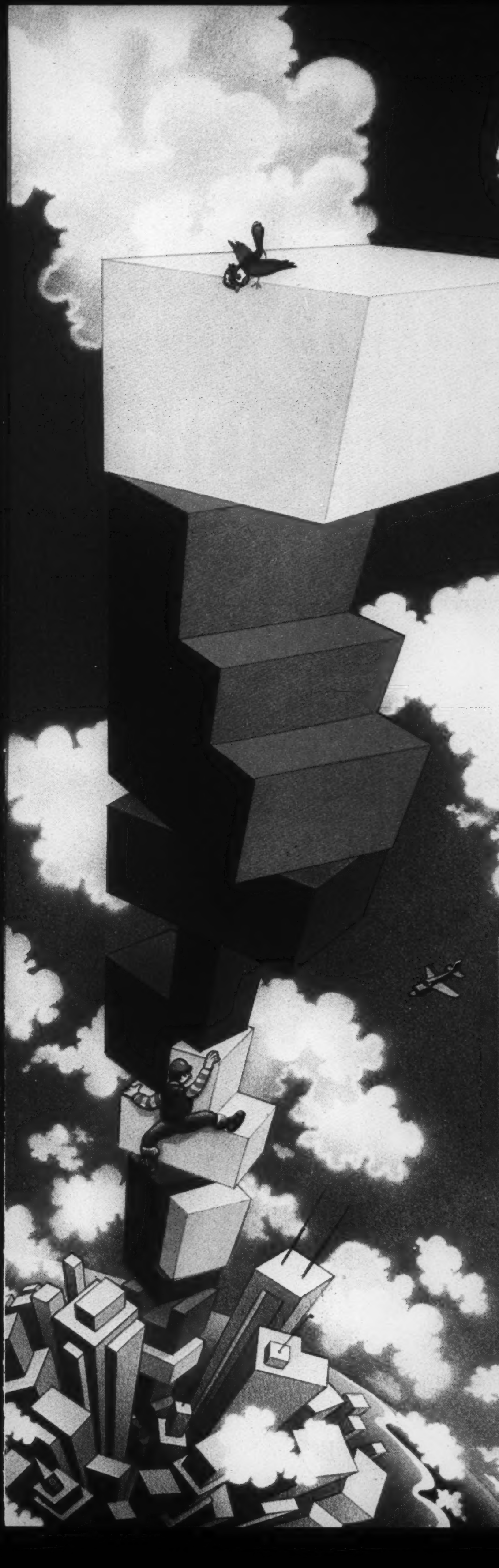

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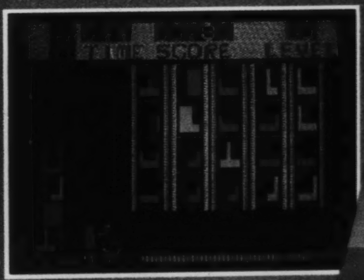

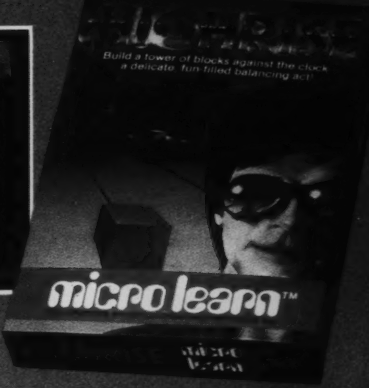
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CIRCLE 240 ON READER SERVICE CARD

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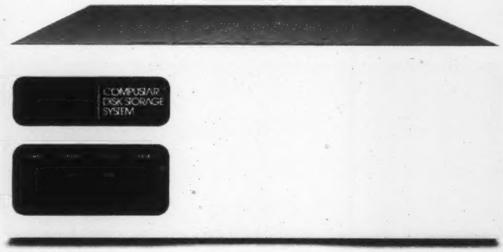

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⁺Microsoft Basic is a registered trademark of Microsoft Corporation.

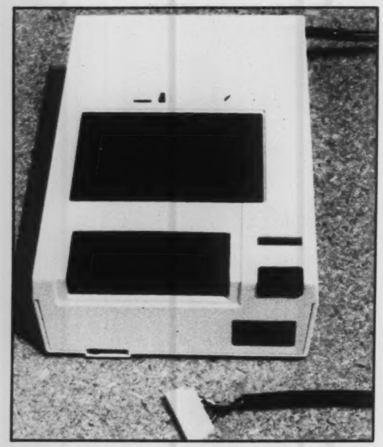
CIRCLE 168 ON READER SERVICE CARD

ters by 24 lines. In Basic, the bottom line is reserved for the function key definitions. Obviously, we thought, there must be a way to turn off this bottom line, but we couldn't find it except in the graphics modes.

There are two graphics modes, low- and high-resolution, appropriately enough. High-resolution provides 256 x 192 pixels; low-resolution has 64 x 48 boxes. In addition, you can use the graphics characters in text mode (40 x 24). While this sounds practically useless, bear in mind that the 52 graphics characters effectively divide each box into four; thus the usable resolution is more like 80 x 48.

Program and Data Storage

SpectraVideo offers both a cassette recorder and floppy disk drive for the SV computers. We had the SV-903 cassette recorder for our evaluation. Unlike other computers, the SV machines cannot use just any cassette recorder. While it might be possible to hook one up, we recommend that you use the SV-903 which is designed for use with the computer.



SpectraVideo cassette recorder has no critical volume and tone adjustments. One channel is digital, the other is audio.

The recorder comes with a single cable which carries power, input and output signals, and control signals to the motor and audio speaker. This is a stereo recorder with programs and data on Channel 1 and audio, if desired, on Channel 2. The recorder has a built-in microphone so you can add your own voice support with your programs.

Digital information is stored at 1800 baud—an in-between speed these days. A 16K program takes a bit over a minute to load.

The SV-902 floppy disk drive is a compact unit which uses single sided, double density disks. The storage capacity is 163.8K per disk. According to SpectraVideo, with the disk drive, the computer is compatible with CP/M software. Naturally, you can't go to the store and buy CP/M disks that will run directly; however, this compatibility opens up the possibility of easy conversion of the huge CP/M software library from both the public domain and commercial vendors.

All these peripherals, as well as modems, printers, and expansion memory, are plugged into the SV computers using either a single slot expansion unit or a motherboard expander with seven plug-in slots. Both of these expanders plug into the back of the computer and receive their power from the computer itself.

MSX — Wave of the Future

SpectraVideo, along with 14 Japanese companies recently announced an agreement with Microsoft to use MSX, a set of specifications for low-end, 8-bit home computers.

Manufacturers adhering to the MSX specification will do their own product design, but the I/O port and major chip functionality has been specified so that all MSX machines will run a common set of software. The MSX spec calls for a Z80A mpu, Texas Instruments 9918 video display processor chip, input/output ports, joystick interface, and a 32K ROM with an enhanced version of the Microsoft Basic interpreter. This version includes support for multivoice music and high-resolution graphics.

Microsoft stated that they expect all the major software companies such as Sierra On-Line, Sirius, Activision, Spinnaker, and others to write software for MSX machines.

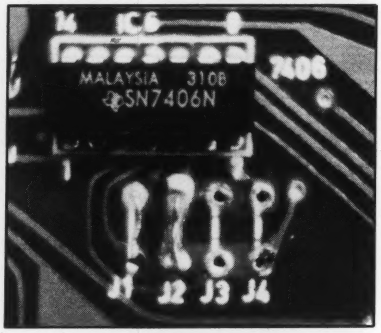
The companies that will be supporting MSX include: SpectraVideo, NEC, Matsushita, Sony, Toshiba, Canon, Fujitsu, General, Hitachi, JVC, Kyocera, Mitsubishi, Pioneer, Sanyo and Yamaha. *—DHA*

Printer

SpectraVideo offers a printer, model SV-901, which is an 80-column, dot matrix unit that operates at 50 characters per second. This popular printer, made by Seikosha, is also sold by several other computer manufacturers as well as by Leading Edge, who call it the Banana.

The SV-901 printer will produce both text and graphics output, but alas, there are no descenders on the g, j, p, q, and y.

However, the printer interface will drive any printer with a Centronics parallel interface. Initially, we were unsuccessful in getting any printed output from our SV-328 on any printers here. A call to SpectraVideo revealed that Jumpers 1 and 2 on the printer interface card must be connected for most printers other than the Seikosha unit. This involves taking three screws out of the interface box and soldering two quarter-inch jumpers near the center of the PC board. SpectraVideo tells us that interfaces will be available for both kinds of printer; purchasing the right one is, of course, a better solution than soldering jumpers.



For non-Seikosha printers, Jumpers 1 and 2 must be installed in printer interface module.

Documentation

If there is a weakness in the SpectraVideo line, it is in documentation. The computer comes with a 136-page User's Manual and 22-page Quick Reference Guide. Both are punched for a 6" x 9" three-ring binder (included), but the spiral bound User's Guide is better used without the binder.

The User's Manual takes a very different approach to teaching Basic than we have seen before. In particular, it starts with graphics and shows how you can use the computer to design simple pictures and draw them on the screen. This is an excellent approach and builds up interest quickly among new users.

Unfortunately, it doesn't go far enough. While it deals with all the standard Basic and graphics commands, it doesn't discuss any of the nifty extended features of the SV computers. Nowhere are we told how to use sprites. The amazing sound capabilities of the machine are covered in only the most cursory way.

The Quick Reference Guide has a short description of most of the Basic statements and commands and will be the document of choice for the skilled programmer; however, it too fails to describe the commands in sufficient detail to allow programs to be written without a great deal of experimentation. Indeed,

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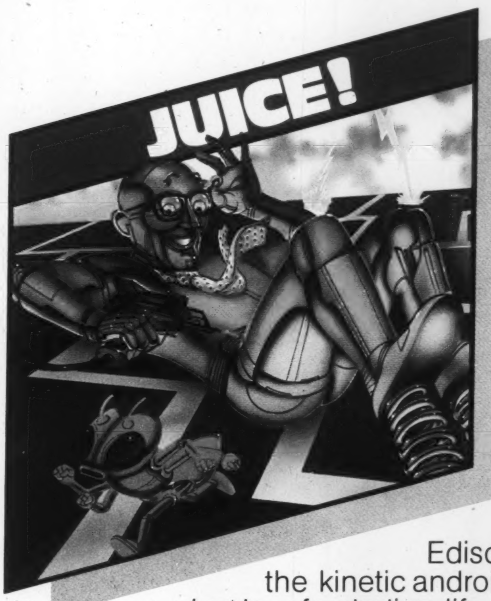


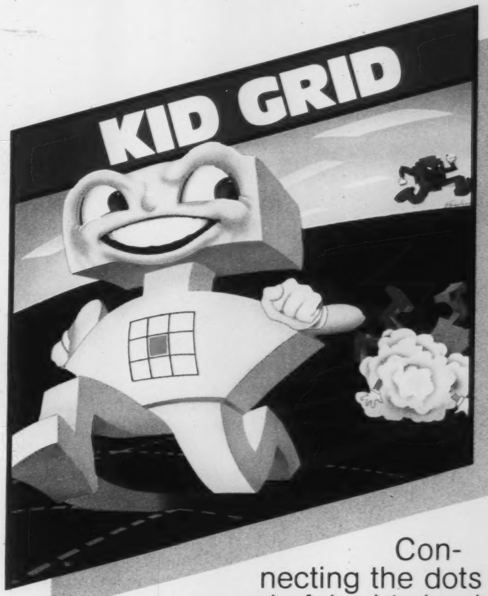
Edison, the kinetic android, leads a frustrating life.

All he wants to do is build his circuit boards and go with the flow. But things keep getting in the way.

Nohms—a negative influence—bug him constantly. Flash, the lightning dolt, disconnects everything in his path.

And the cunning Killerwatt is out to fry poor Edison's brains.

You'll get a charge out of this one. And a few jolts, too!
(Requires 32K memory. Suggested retail $29.95)



Connecting the dots on our colorful grid should be easy, right?

Wrong. Because the bullies are in hot pursuit!

Squashface, Thuggy, Muggy and Moose are their names. And *you* are their game. And what's more, they're faster than you are.

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So keep your eyes peeled for the mysterious question mark and don't slow down at corners!
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SpectraVideo SV-328, continued...

A fully-configured SV-328 system at the plant in Hong Kong.

after an afternoon of experimentation, I had more pages of notes than there were pages in the Quick Reference Guide.

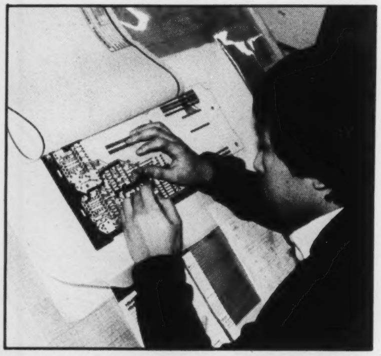
However, it is our expectation that the SpectraVideo computers will achieve a strong market position and publishers will leap into the documentation void with enthusiasm. We are sure that authors will be eager to tell the world how to get the most out of a machine with these capabilities.

Software and Support

SpectraVideo is no newcomer to the personal computer market, even though this is their first computer. They have been successfully marketing several excellent games and a joystick for the Atari VCS for some time. At CES, we were amazed at the lineup of software they had running on these computers, the prototypes of which are barely six months old.

SpectraVideo had a spreadsheet package, *MultiPlan, MultiTool-Filer,* home accounting programs, a word processing package, five utility packages, 15 or so educational programs, and scores of games. Moreover, they have announced an attachment which allows ColecoVision games to be played directly on the SV computers.

While SpectraVideo does not seem to be encouraging third party software manufacturers to develop software for the computers, they have not ruled it out either.



Laying out one of the interface boards.

As far as service goes, at this point, it is a big unknown. Obviously, mass market outlets are not in a position to offer service other than exchanging the unit outright, hence, this will probably be the approach for service under the initial 90-day warranty.

Beyond that period, SpectraVideo tells us that they have an agreement with Carterfone to provide nationwide service through the Carterfone service organization. This seems like a good approach since Carterfone is a well-established, professional organization with electronic servicing experience.

In Summary

The SpectraVideo SV-318 and SV-328 computers offer an incredible array of features at very attractive prices. The extended Microsoft Basic language has outstanding graphics, sound, and I/O capability. The keyboard on the SV-318 is among the best of the Chiclet-style units while the full-stroke keyboard on the SV-328 is outstanding compared to any other. The on-screen editing is a joy, and the "extra" function keys make programming fast and easy.

SpectraVideo has demonstrated many software packages which should be on dealer shelves before long.

The full array of peripherals means you will not quickly outgrow the system. The CP/M capability with the disk drive opens up a potentially huge library of software that augments the impressive lineup already announced by SpectraVideo.

The one glaring weakness in an otherwise outstanding offering is that the documentation just doesn't provide the information needed to exploit the advanced capabilities of the computer. Nevertheless, at the suggested retail price of $299 for the basic SV-318, we agree with SpectraVideo, that this is a "computer system you'll grow into, not out of." □

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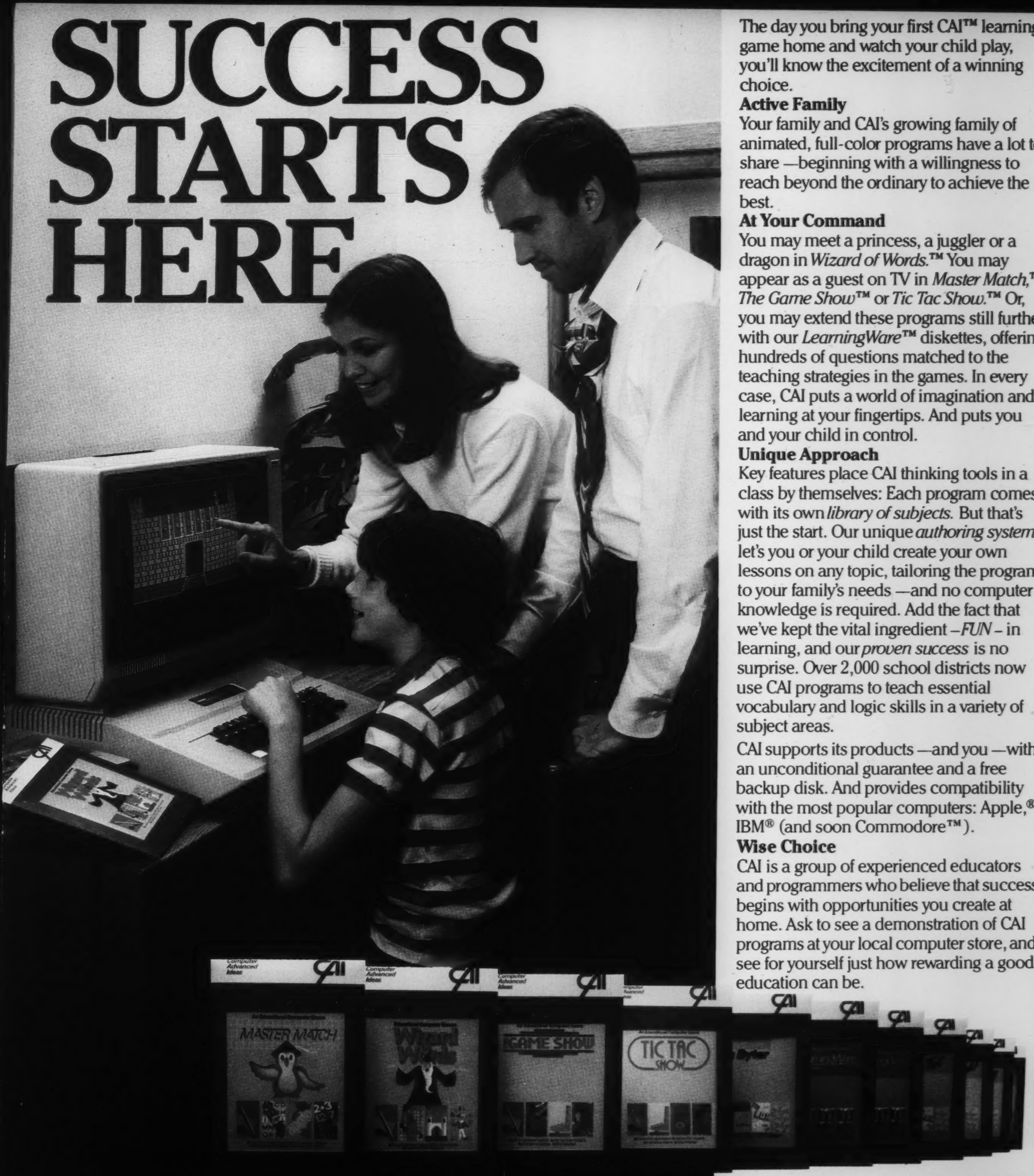

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The Pied Piper Communicator

Joe Devlin

The Osborne 1, introduced in 1981, has many things going for it—a low price, portability, and bundled software that includes the CP/M operating system, a word processor and a spreadsheet package. The machine also has its limitations—most notably a 4" screen and a 27 pound weight that makes it difficult to carry long distances.

There have been many imitators, all trying to grab a piece of Osborne's success by offering a few extras. Some give you a bigger screen, some a lighter weight. The Pied Piper Communicator 1 is the latest of this group. The Pied Piper does not look like the Osborne, but it is constructed according to the same formula—low price, bundled software, and portability.

The Piper is a Z80 based system manufactured by STM Electronics Corporation. It features 64K of random access memory, a single disk drive, and six software packages—all for $1299. Like the Osborne, it is quite a lot of machine for the price. In fact, the Piper is one of the least expensive portables on the market today. The manufacturer achieves this low price by offering a slightly different type of bait than Osborne and most of its clones. Some will wish to bite, others will go for the hook with the old flavor.

When judged by the standards of previous portable computers, the Pied Piper is an odd looking machine. This is not to say the machine is ugly. In fact it is quite attractive. It just doesn't look like a computer. With the protective cover in place over the keyboard the Piper is easily mistaken for one of those ubiquitous radios so often seen balanced on youthful shoulders.

Remove the protective cover and the Pied Piper begins to look more like a computer. The keyboard you find is a high-quality, full-sized, full-stroke keyboard complete with upper/lowercase shift, caps lock, escape, delete, break, and back space keys. Two cursor control keys provide vertical and horizontal scrolling.

All the keys have a nice, substantial feel and will repeat if held down long enough. Above the keyboard are three indicators which tell when the unit is powered up and when the disk drives are operational. A single 5.25" disk drive is built into the right front of the machine next to the keyboard.

All hardware interfacing is through the back of the machine. In the lower central region are a TV output, reset button, monitor output, and printer port. The carrying handle is recessed into the back of the machine. On the right is the on/off button and a place to plug in the power cord. Behind two plastic cover plates on the right is an edge card (expansion bus) and a four-pin connector that allows a dealer to attach a second disk drive. Other dealer-installed options include two RS-232 interfaces that go into the opening underneath the carrying handle, a built-in modem, and an external hard disk drive.

Looks aside, the hard plastic case is not very sturdy and is one of the weakest points of the Pied Piper. For example, the hollow plastic handle that collapses into the back of the machine is of lower quality than handles found on most portable radios. The keyboard cover is difficult to remove and is awkwardly hinged on two flimsy plastic tabs. The disk drive and most of the cable connections are left open to the elements, and no space is provided in the case to carry the detachable power cable, CRT cable, or floppy disks.

About The Screen (Or Lack Thereof)

One of the reasons the Pied Piper can be sold for so much less than the Osborne and its clones is that it lacks a built-in screen. This can be viewed as either a blessing or a curse depending upon how you want to use your computer.

If you must have a built-in screen, then obviously the Piper will not be your choice. On the other hand, many people have found the Osborne 4" screen with the 24 line by 52 character display too small for serious work. Sure, you can attach an external monitor to the machine, but if you are going to do this you don't need the dead weight of a built-in monitor. At almost 27 pounds the Osborne quickly becomes difficult for all but the burliest he-man to carry. The Piper may not have a built-in screen, but at just over 11 pounds it is much easier to tote around.

When the time comes to attach some sort of screen to the Piper you have several options. The Piper comes with both monitor and TV connections. This means that you can plug your machine into a CRT monitor or, if you don't mind an inferior picture, you can use an

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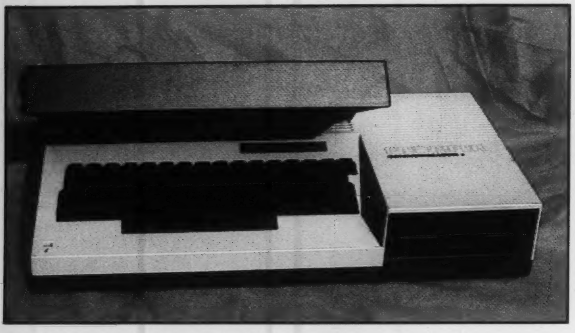
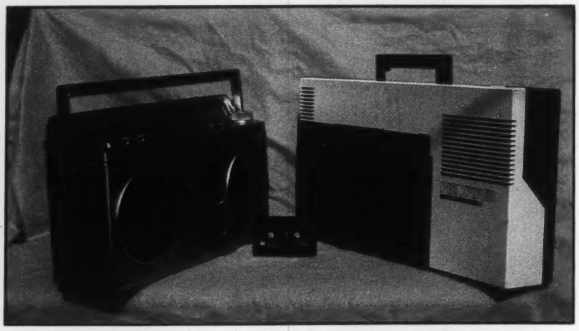


Cover off, the Piper looks like a computer.



Cover on, the Piper is easily mistaken for a portable radio.

RF modulator to connect your machine to a convenient TV set. A two-line, 80-column LCD display can also be purchased from the manufacturer.

The monochrome image provided by using a video monitor is 80 characters wide by 24 lines deep and is clear and crisp. A program is provided that pares the screen width down to 40 characters for TV sets and monitors that cannot handle an 80-character line. If you do want to see 80 columns on the TV you can make use of a horizontal scrolling feature. The cursor is a solid block. A blinking cursor would help.

Disk Drive

The Piper comes with a single 5.25" floppy disk drive built in. That one drive, however, offers an impressive 784K of formatted storage (1Mb unformatted)—more storage than most computers offer on two disk drives. The Osborne, for example, typically provides only 340K of unformatted storage on two disk drives. Then again, two drives of a lower capacity can be much more convenient than a single drive of any capacity.

For example, backing up on a one disk drive system requires constant swapping of source and object disks. The copy program provided with the Piper copies files in segments of 30K each. This means that you will have to go through approximately 20 copy cycles to copy a full disk.

The disk connector in the back of the machine supports the attachment of a second floppy disk drive. The addition of that drive, while not necessary, would add a great deal of convenience. A hard disk drive is available for those who need even more storage.

The Great Software Giveaway

The software that comes with the Piper includes the CP/M operating system (version 2.2), a selection of CP/M and Pied Piper utilities, and four applications packages produced by Perfect Software, Inc. The Basic language does not come with the system and must be purchased separately.

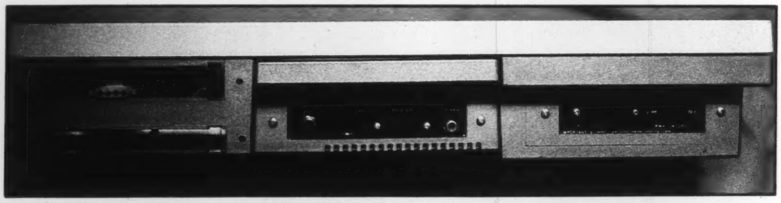
The applications software includes the *Perfect Writer* word processing package, *Perfect Speller* spelling checker, *Perfect Filer* file management system, and *Perfect Calc* spreadsheet package. These are all proven software packages that have been available for some time. (Kaypro, for example, offers the same four Perfect programs with their portable computer.)

Each of the four Perfect software packages is a well written and powerful example of software of its genre. STM says that the software that comes with the Piper could cost up to $1700 if purchased separately. (*Perfect Writer* retails for $289 and the other packages cost $189 each.) In addition, each of the four packages can work with data supplied by the other three. For example, names and addresses maintained in *Perfect Filer* can be used to compose form letters using *Perfect Writer* and can be checked for spelling using *Perfect Speller.*

Perfect Writer is the type of word processor that uses a logical sequence of two keystrokes to perform most word processing functions. Press CONTROL or ESCAPE in conjunction with other keys to tell the program what to do.

Perfect Writer can handle all the functions normally desired in a word processor. Features include search and replace, subscripts and superscripts, and the automatic placement of footnotes. The software can also construct a table of contents or an index of key words and can justify margins, paginate, underline, center text, and produce proportional spacing. You can save a document periodically during an editing session and you will find the command that lets you recall accidental deletions to be especially useful.

The virtual memory feature merits special notice. This feature allocates the resources of the computer, automatically breaking up documents too large to fit into RAM into smaller pieces that are automatically swapped in and out from disk as needed. The result is that the Piper can edit documents larger than its 64K internal memory and can control editing of up to seven programs and files at a time. All this swapping is done so quickly and efficiently that most typists will remain unaware that anything so sneaky is going on as they type.



Both monitor and TV connections are standard. This portable can be used with any convenient screen.

Another nifty feature is the use of split screen displays, which allow you to work with and view two screens at a time. (For more information on *Perfect Writer* see the review in the June 1983 issue of *Creative Computing.)*

The other three packages use commands and operating logic similar to those of *Perfect Writer,* which means that you don't have to memorize four entirely different sets of commands. For example, all four Perfect software packages make use of the same virtual memory and split screen capabilities.

Perfect Speller is a spelling checker with a 50,000-word dictionary. It can

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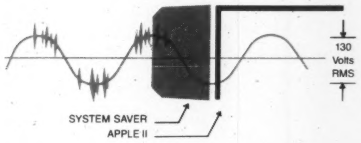

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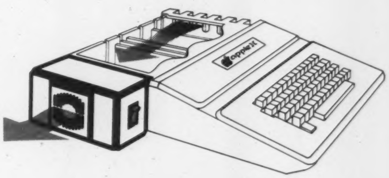

SYSTEM SAVER provides correct cooling. An efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots.

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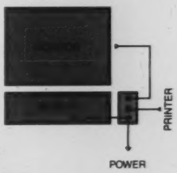

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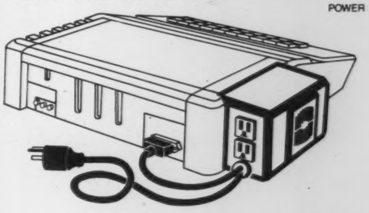

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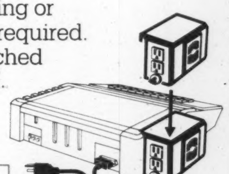

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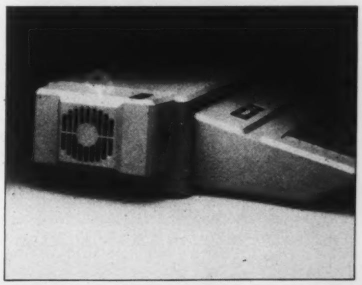

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handle 4000 words a minute or ten pages in about a minute and a half. Should 50,000 words prove insufficient, you can add your own words to the dictionary.

The *Perfect Filer* data management package will sort up to 65,000 records on up to five keys simultaneously and includes two predefined mailing list databases.

Perfect Calc is an electronic spreadsheet program that comes with a library of 16 predefined spreadsheets including personal finance, small business accounting, and stock portfolio evaluation.

Documentation

The documentation that comes with the Pied Piper is a mixed bag. Each of the Perfect software packages comes with an excellent user's manual and a reference card. However, the manuals obviously were not written for the Pied Piper. For example, although all the commands in the *Perfect Writer* manual seem to work, there are a few commands that work on the machine that are not explained in the manual. The up, down, right, and left arrows will let you move the cursor through the document without having to type any control characters. This fact is not mentioned anywhere in the *Perfect Writer* manual.

There is a HELP function which should be used to explain machine-specific commands. You can easily get into the HELP function, but once inside, it is quite hard to get out. Not to mention the fact that HELP does not seem to give you any information that you can use.

The user's manual provided with the computer is a dreadful 72-page spiral-bound pamphlet. Two thirds of this pamphlet is devoted to brief descriptions of the more important CP/M commands. Nowhere does the manual describe the most rudimentary technical specifications of the machine. If you want to know how to attach or where to attach peripherals such as printers and modems you will have to look elsewhere.

I have also seen a photocopy of a well written, 17-page Software Primer. This short primer introduces you to the software, guiding you through such vital areas as copying disks and booting the various software packages. I am told that a 76-page specification book will be available by the time you read this. With luck it will fill in some of the gaping holes in the original manual.

Service

STM has signed a contract with Xerox to provide service for the Piper at any of its over 100 service centers throughout the U.S. Xerox guarantees 16-hour turnaround on Pied Piper repairs. A technical support number is being set up jointly by STM and Perfect Software to answer software related questions. A 24-hour telephone service line has been set up to provide information about dealers and service centers.

The Piper comes with the standard 90-day warranty. Those who want extra protection can purchase an extended one-year warranty that is activated at the end of the initial 90-day term for $199.

In sum, the Piper looks like a winner, a few rough edges notwithstanding. A sturdier, more weatherproof case would be nice, and the documentation has a long way to go. However, if you are looking for a low-cost, full-featured, portable computing system, the Piper may well be your choice. Especially if you don't want the built-in screen that comes with most other portables and don't need the exercise that comes with lugging that built-in screen. At 11½ pounds and $1299 the Piper may be the machine you want to carry away.

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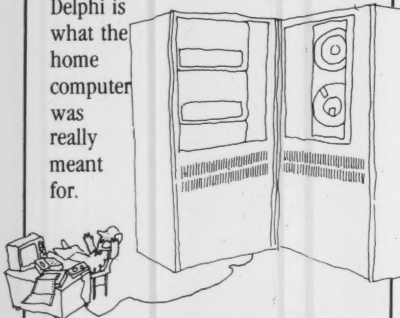

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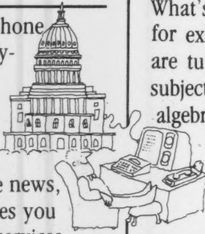

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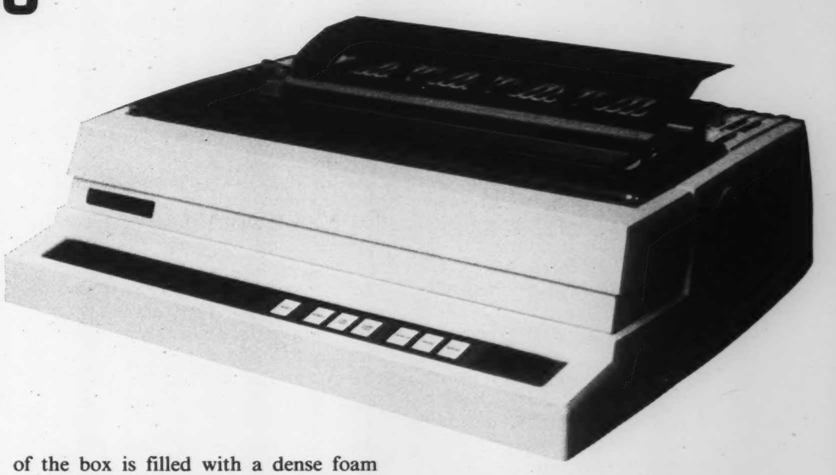
The Diablo 630



David H. Ahl

We recently had the opportunity to conduct an extended use test of two Diablo printers, the Models 630 API and 630 ECS/IBM. The acronyms stand for, respectively, All Purpose Interface, Extended Character Set, and, of course, Big Blue.

Diablo Systems Inc. is the pioneering manufacturer of letter quality daisy wheel printers. For many years, most of their business was producing printers on an OEM basis for other manufacturers and system integrators. Indeed, as recently as two years ago, over 90% of Diablo's sales were to OEMs. Today, however, end users account for nearly 45% of Diablo's business. Still, you may well find yourself looking at a Diablo printer with someone else's name on it.

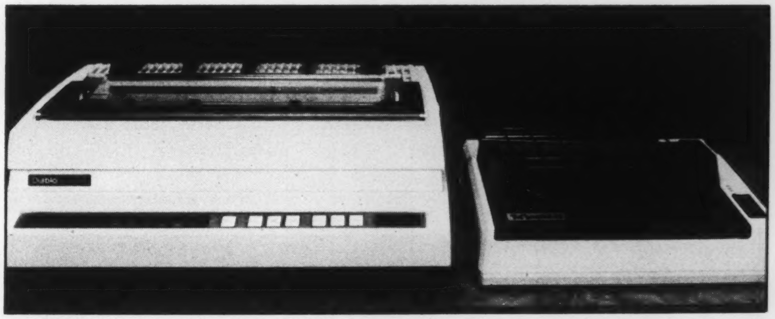
Over the years, the numbering system on Diablo printers has been somewhat confusing. The most popular models have been the 1620, 1640, 1650, Hytype I and Hytype II. Frequently, software is advertised as being able to run on one or another of these printers. Unlike many computers we could name, Diablo has continued to use the same control codes in all their printers, hence, software written for earlier models will probably work on the current 630 models.

Setting Up

The Diablo 630 comes in a box the size of a small house. Fortunately, most of the box is filled with a dense foam cushioning material; the printer is about the size of a wide carriage electric typewriter (23" x 19" x 10"). Still, this is big. Alongside a modern 80-column dot matrix printer, the Diablo 630 looks like a Peterbilt next to a Chevy Luv. The comparison is apt: four dot matrix printers would fit in the same volume as the 630; the 630 is very solid and heavy; it is slow and fairly noisy, but is designed to produce high quality print day in and day out for years.

For your $2340, you get the printer itself, and a 30-page manual—that's it. To connect the API printer to a computer, you need a cable for another $89. Six cables are available to go between the 50-pin connector on the 630 and the following connectors: RS-232C; IEEE-488; IBM PC; Apple II or III; TRS-80 Model I, III, or 4; and Centronics 703.

The design is very clever as both the parallel and serial interfaces are contained in the Model 630 and API and it simply selects the active signal entering the 50-pin connector. Thus you could make up your own cable with both serial



Diablo 630 is about four times the size and weight of a typical 80-column dot matrix printer.

creative computing

HARDWARE PROFILE

Product: Diablo 630 printer

Type: Daisy wheel printer

System: Interface cables for nearly all computers

Specifications: Print speed: up to 40 cps, bi-directional. Pitch: 10, 12, 15, and proportional. Prints up to 6 copies. 88, 96 or 192 characters per print wheel

Performance: Excellent

Ease of Use: Excellent

Documentation: Fair

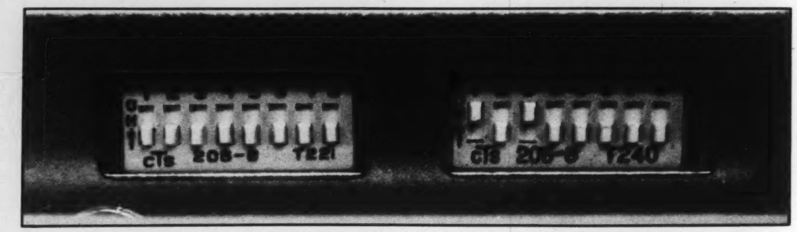
Price: Approx. $2500 with cable, print wheel and ribbons.

Summary: A rugged, high-quality printer. Should have a long service life. Only daisy wheel printer to reproduce entire IBM PC character set.

Overall Mark: Excellent

Manufacturer:
Diablo Systems Inc.
901 Page Ave.
Fremont, CA 94537
(415) 498-7000

and parallel connectors (or even two different parallel connectors) for more than one computer. To do this, you would probably need to buy either the ECS API Interface Manual for $8 (describes pin assignments and signal definitions in detail) or the Interface Reference Manual (shows RS-232 cable diagrams for over 75 different computers).


Two DIP switches select interface protocol, language, baud rate, and other attributes which are rarely changed in use.

The Model 630 ECS/IBM is specially designed to work with the IBM PC and includes the connecting cable. The main difference between this printer and the 630 API is that it supports a special 192-character printwheel. There are two characters on each of the 96 plastic petals, and, in addition to rotating, the wheel jogs slightly to print the inner character. Carrying this process one step further, several printed characters require two stokes, accented letters, for example. In all, 241 separate characters can be printed (see Figure 1).

In addition to the cable, you must also purchase separately a print wheel and ribbon cartridge. The printer can handle either a plastic or metal daisy wheel. A metal wheel costs about $69 compared to $8 for a plastic one. However, a metal wheel will last virtually forever whereas in heavy duty use of a plastic wheel will not last for more than two or three months.

Two flavors or ribbon are available, a 400′ carbon film multi strike and a 60′ nylon one. Both cost about $7 or $8.

Setting up the printer is very simple. First, you remove a few shipping restraint screws and tie wraps, install the black plastic paper rack on top, snap in a clear plastic sound panel, and plug in the cable to the 630 and your computer. A series of photos in the manual shows how to perform these steps as well as how to install the print wheel and ribbon carriage.

Following this physical setup, you must contend with two rotary switches and 16 DIP switches. All are conveniently exposed when the front cover is removed. Setting the switches is not as complicated as it might seem from looking at the manual. One rotary switch selects the type of print wheel while the other selects the pitch (10, 12, or 15 characters per inch, proportional spacing, or self-test).

The DIP switches select language (English, German, etc.), baud rate, parity, auto linefeed, and printer ready protocol. You may have to try both positions of this last switch since most computer manuals are not clear as to whether the printer ready or DC1/DC3 protocol is used. The 630 manual describes this in some detail, but it was of little help since we didn't know what any of our computers was expecting.

IEEE interface users will have to set another four DIP switches to specify the primary address. Again, this is described in much detail in the 630 manual.

It is probably a good idea to perform the self-test next. On page 13 in the API manual it states, "The Model 630 includes a provision for self-test." On page 14 is sample output from the self-test, but in no place does the manual explicitly describe how to activate the test. Fortunately, the ECS/IBM manual corrects this oversight with a complete description of the self-test on page 28.

```
LIST
10 LPRINT CHR$(14)
20 FOR I=1 TO 254
30 IF (I>6 AND I<14) OR (I=19) OR (I=27) OR (I>28 AND I<33) THEN 60
40 PRINT CHR$(I);" ";
50 IF POS(0)>50 THEN PRINT
60 NEXT I
Ok

RUN
☺ ☻ ♥ ♦ ♣ ♠ ♫ ☼ ► ◄ ↕ ¶ § ▬ ↨ ↑ ↓ →   ! " # $ % &
' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
@ A B C D E F G H I J K L M N O P Q R S T U V W X
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∩ ≡ ± ≥ ≤ ⌠ ⌡ ÷ ≈ ° ∙ · √ ⁿ ² ■
Ok
```

Figure 1. 241 characters can be printed by the Diablo Model 630 ECS/IBM.

For normal operation, the setup is now finished and the printer is ready to go. However, it is also possible to teach the 630 some additional facts such as top, bottom, right, and left margins; tab stops; page length; and spacing. To do this involves manually spacing the printer to the desired point and sending it a control code from the computer. This feature is probably of more use to the designer of a word processing package than to most end users, but if you want to get exotic with your output formatting, the 630 has the capability.

Powering Up and Printing

When the printer is buttoned up, the outside front panel has six indicator lights (power on, cover open, etc.) and seven touch sensitive switches (reset, linefeed, pause, etc.). In addition to lighting up the appropriate LED, error conditions also cause a brief warning beeper to sound.

Okay, so you have put in paper, rotated the platen to the top of a sheet, and are ready to go. What to print? Here is an idea suggested to me by Richard Vogler, senior product manager of Diablo. Print five or six full rows (132 characters) of capital H's. This is a tough test of printer quality. The print density should be perfectly uniform from the beginning to the end of the line, the line should be absolutely straight, and the vertical elements of each H should be of uniform density.

Here is a short program to do this:

```
10 FOR N=1 TO 5
20 FOR I=1 TO 132
30 LPRINT "H";
40 NEXT I:LPRINT
50 NEXT N
```

How did the 630 stack up on this test? Pretty well, although it was not absolutely perfect. Density was uniform,

programmer s

READ THIS...

```
10  REM PROGRAM FOR WRITING/SELLING YOUR PROGRAMS AND IDEAS
15  REM TO SOFTWARE PUBLISHERS, GAME COMPANIES, OEM'S, ETC.
20  S = $ALEABILITY: O = ORIGINALITY: C = CREATIVITY: GD = GOOD
    DOCUMENTATION
30  E = ENTHUSIASM: P = PERSEVERANCE
40  PGM = PROGRAM: ENV = ENVELOPE: T = TODAY
50  IF  E  =  P  THEN  GOSUB  80:  REM  SOFTWARE  COMPANIES ARE
    SEARCHING FOR GOOD PROGRAMS
60  FOR  X  =  1  TO 10: REM READ CHAPTER ON "THE X FACTOR = 10
    STEPS TO WRITING A $UCCE$$FUL PROGRAM"
70  S  = X + O + C + GD: NEXT X : REM DON'T CONFUSE X WITH S or
    O or C or GD. X = 10 ADDITIONAL FACTORS
80  GET $OFTWARE WRITER'S HANDBOOK
90  PEEK $OFTWARE WRITER'S HANDBOOK: REM FOR IMPORTANT GUIDANCE
    ON WHAT PROGRAMS THE COMPUTER COMPANIES/PUBLISHERS WANT
100 PEEK $OFTWARE WRITER'S HANDBOOK: REM FOR DETAILS ON HOW  TO
    WRITE A $UCCE$$FUL PROGRAM
110 WRITE PROGRAM
120 DEBUG PROGRAM:  REM  READ HANDBOOK CHAPTER "HOW TO DEBUG"
130 PEEK SOFTWARE WRITER'S HANDBOOK: REM READ HANDBOOK CHAPTER
    "HOW TO WRITE CLEAR DOCUMENTATION"
140 WRITE DOCUMENTATION: REM CLEAR DOCUMENTATION IS THE FIRST
    THING PUBLISHER'S LOOK FOR.
150 PEEK $OFTWARE WRITER'S HANDBOOK:  REM  FOR  THE  NAMES  AND
    ADDRESSES OF THE RIGHT PUBLISHERS FOR YOUR TYPE OF PROGRAM
160 POKE PGM + ENV: REM PUT PROGRAM IN ENVELOPE AND MAIL IT  TO
    THE RIGHT PUBLISHERS
170 RETURN: REM RETURN  TO  HANDBOOK  REPEATEDLY  FOR  IDEAS  +
    INFORMATION ON THE WHO/HOW/WHAT OF SELLING YOUR PROGRAMS
180 READ Q: POKE Q + ENV + T: REM FILL IN THE DATA AND SEND FOR
    YOUR COPY OF THE "$OFTWARE WRITER'S HANDBOOK"
190 DATA SEND CHECK OR MONEY ORDER FOR $19.95
200 DATA SORRY, NO C.O.D.'S
210 DATA MAIL TO: SOFTWARE WRITER'S GUILD
220 DATA          P.O. BOX 87
230 DATA          STONY POINT, NEW YORK 10980
240 DATA          (914) 354-5462
250 DATA INCLUDE YOUR NAME, ADDRESS, PHONE #
260 END: REM ACTUALLY A VERY $MART BEGINNING
```

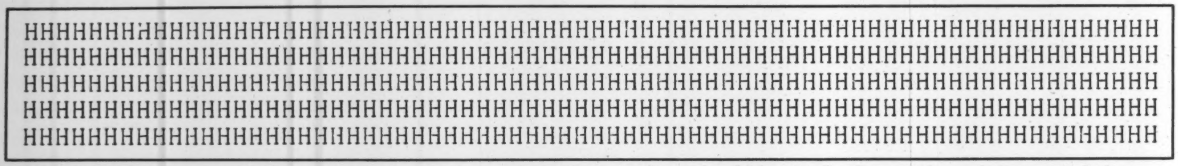
CIRCLE 250 ON READER SERVICE CARD

the lines were straight, but occasional vertical elements were not quite uniform (see Figure 2).

Dick Vogler told me that the 630 could easily run faster than 40 characters per second, but Diablo quality control people demand absolutely perfect registration of characters on a line, thus they elected to limit the speed. Incidentally, the speed is quoted as being "up to 40 cps." The minimum speed is 32 cps with 10-pitch metal printwheel or extended character set plastic printwheel with no shifting. Naturally, printing characters that require two strikes of the ECS/IBM wheel slows print speed considerably.

In addition to a rich character set on the ECS printwheels, Diablo offers a wide assortment of standard wheels. EDP supply catalogs may lead you to believe there are about 12 choices of printwheels for the Diablo. Not so. The Diablo Type Book lists over 200 printwheels. A sample of several common fonts is shown in Figure 3.

Depending upon the word processing package on your computer, the 630 is able to perform several special printing and formatting functions such as under-



HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
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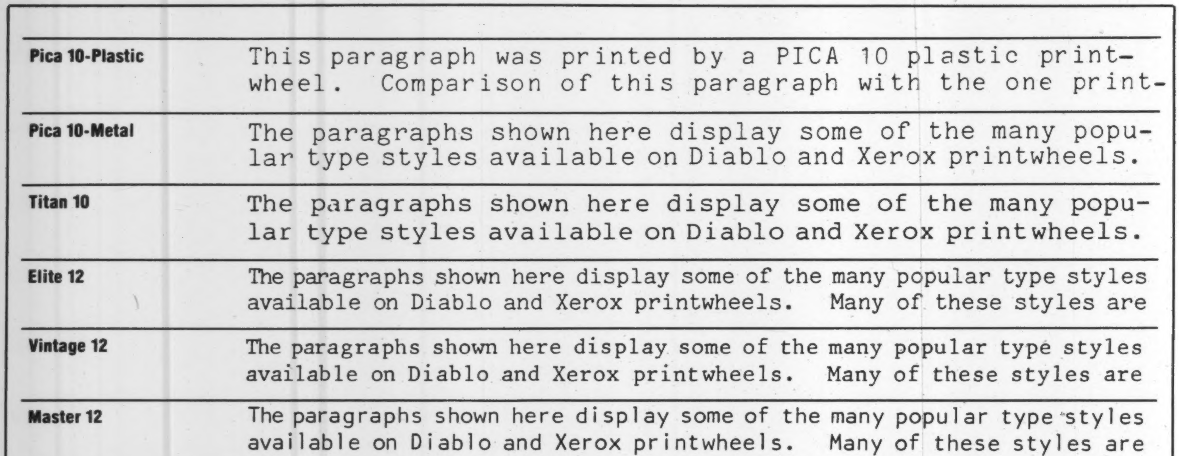
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

Figure 2. Printing a row of H's is a tough test of print quality. The print lines should be absolutely straight and the vertical elements should be of uniform density.



Pica 10-Plastic	This paragraph was printed by a PICA 10 plastic printwheel. Comparison of this paragraph with the one print-
Pica 10-Metal	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels.
Titan 10	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels.
Elite 12	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are
Vintage 12	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are
Master 12	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are
USA Spokesman 10	THE PARAGRAPHS SHOWN HERE DISPLAY SOME OF THE MANY POPULAR TYPE STYLES AVAILABLE ON DIABLO AND XEROX PRINT-
Roman PS	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are
Cubic PS	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are
Bold PS	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are
Script PS-96	*The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are*
Titan Italics 12	*The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these*
Gothic PS	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox printwheels. Many of these styles are
Tile 15-96 W.P.	The paragraphs shown here display some of the many popular type styles available on Diablo and Xerox print-

Figure 3. Diablo offers a wide variety of type fonts for the 630 printers.

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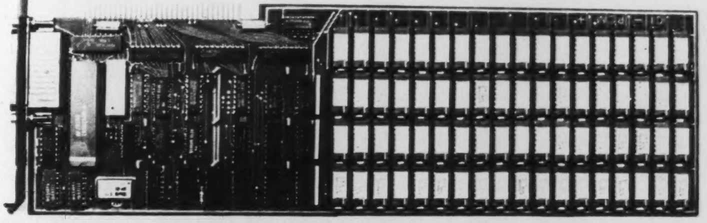

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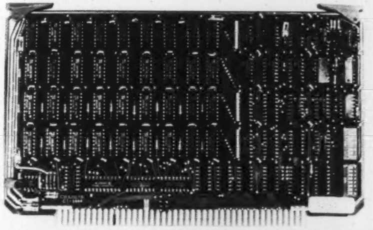

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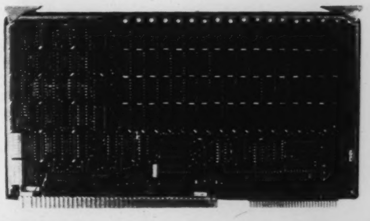

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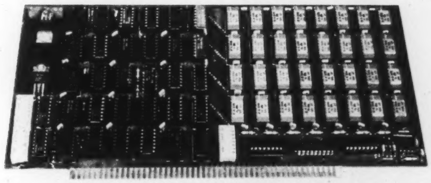

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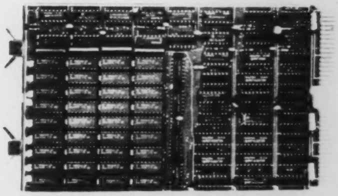

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CIRCLE 136 ON READER SERVICE CARD

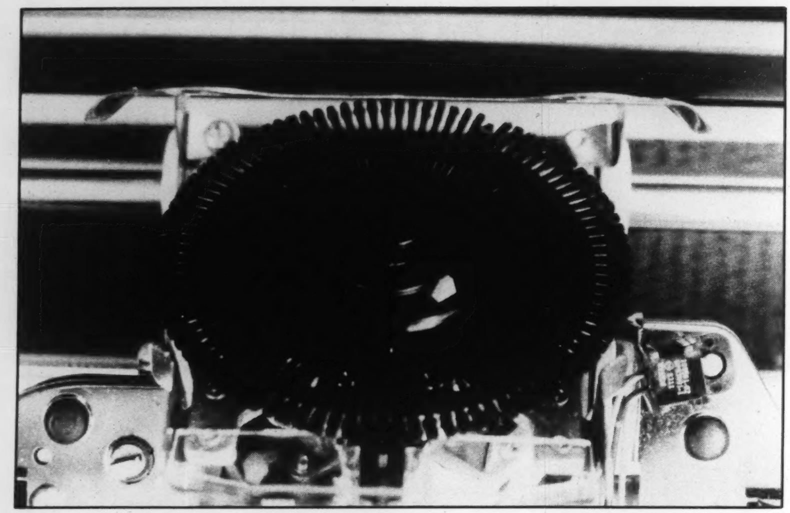
lining, bold face, strike over, subscripts, superscripts, and justification (see Figure 4).

Diablo is working closely with most of the major suppliers of word processing programs for the IBM PC to ensure that they will all support the 630 extended character set. To the user this would mean that when a character above ASCII 128 is used it will be displayed correctly on the screen even though it is typed with the control or alt mode key in combination with a letter. So far, the packages that will support this approach include *Word Star, Peachtext, Easy Writer II, Volkswriter,* and *Word Plus-PC.*

We tried several different word processing packages with the 630 ECS/IBM printer and had no trouble achieving the desired output. We also tried the 630 API with several different computer systems and word processing packages, including a home brew text formatting package that I wrote for the TRS-80 Model 100. Again, no problems.

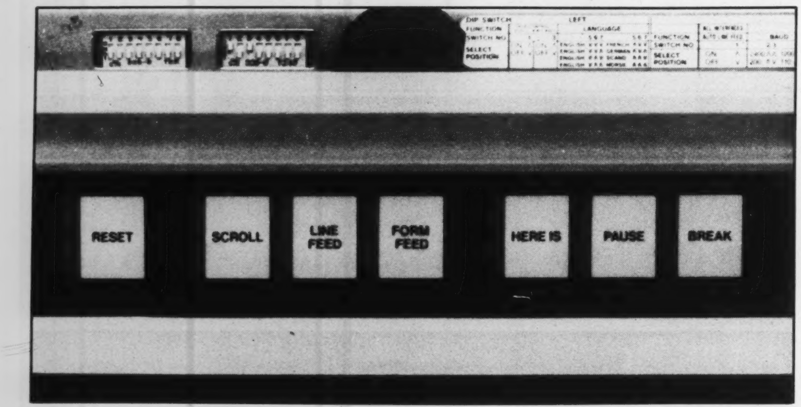
The only computer with which the 630 did not function perfectly was the Olivetti M20 (it refused to execute a carriage return—ever). We suspect the problem is with the computer and not the 630.

On the other hand, the furnished RS-232 cable did not work with any of the computers we first tried. The reason for this was immediately apparent when we got the Interface Reference Manual; most computers require switching the connections to one or two pins or require two pins to be tied together. The computers with which the cable will work without modification are the Xerox 820, Heath/Zenith 89, Osborne 1, Northstar Advantage, and Apple with the Super Serial card.



Typewheels are held by friction fit on the spindle.

Unlike the 1600 series Diablo printers, the 630 has a 1344-character buffer. This is about 190 words or 80% of a double-spaced page. This all but eliminates handshaking during printing since the computer can transmit bursts of text at the full baud rate. The baud rate can be set to 110, 300, 1200, or 2400; we settled on 1200 as a happy middle ground. Of course, an external buffer such as the Micro Fazer can be used between the computer and the printer.

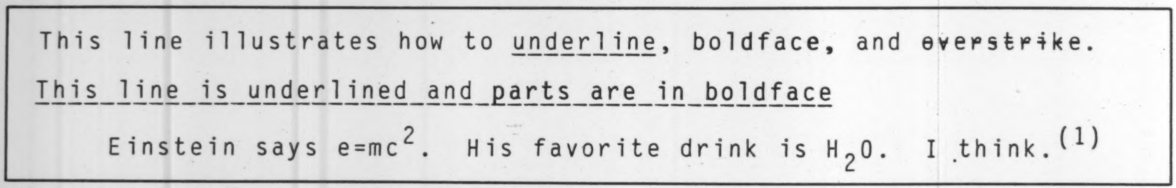


Seven functions are selected on touch-sensitive front panel.

The built-in buffer just doesn't forget anything. If the 630 halts during printing, say because the end of a ribbon has been reached, you can change the ribbon, press reset, and the 630 will resume printing without missing a single character. In fact, there is no way of interrupting the print once the buffer is filled. If you find your program has produced a load of garbage that you don't want printed, your only recourse is to turn off the printer power. The functioning of the buffer, incidentally, is not described in the manual.

In addition to the standard text printing mode, two other print modes are available: graphics and vector plotting. While the operating codes for these features are listed in the manual, their use is not described, nor are there any programming examples (Diablo could take a lesson in manual writing from Epson). As a result, the user will have to turn to magazine articles to learn how to make full use of these graphics features. We tried the plotting program for the Diablo 1610 from the June 1979 issue of *Creative Computing* and, with a few minor changes, it worked like a champ.

Under normal circumstances, we



This line illustrates how to underline, **boldface**, and overstrike.

This line is underlined and **parts are in boldface**

Einstein says $e=mc^2$. His favorite drink is H_2O. I think.(1)

Figure 4. Print sample shows several special printing features.

Can you tell the IBM® from the Transtar 130?

A

```
Letter quality
standard of
the industry
```

5x magnification

B

```
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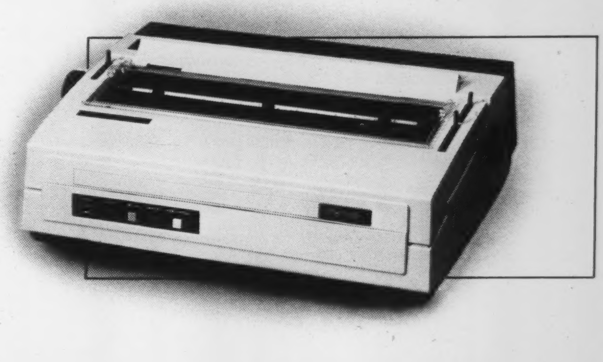

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CIRCLE 221 ON READER SERVICE CARD

would expect the 630 to be used with single sheets of paper; after all, it is a letter quality printer and letters are normally typed on letterhead. For high volume use, a single sheet feeder is available. This monstrosity clamps on the top of the printer and plugs into the back. We didn't try it, but we saw it demonstrated at NCC and it worked reliably.

However, we did try the tractor feeder. This also clamps on the top of the printer and has adjustable width tractors which can handle anything from 2½" wide labels to 15" EDP paper.

The 630 has a two-position forms thickness switch which allows printing of up to six-part carbon forms. We tried printing a four-part form with excellent results.

Reliability and Maintenance

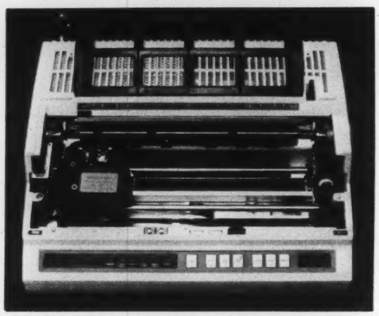
The Diablo 630 carries a 90-day unconditional warranty. If required, service during this period would be performed by the dealer which sold the printer. After that, you have a choice of service from the local dealer, four regional Diablo service centers, 200 Xerox service centers, or an independent service such as Sorbus. One year on-site service contracts from Sorbus cost about $300 and may be a good investment if the printer is to be put into continuous duty operation.

On the other hand, Diablo printers have a well-deserved reputation for reliable operation. Our oldest Diablo printer is a 1641 which we have been using more or less continuously for nearly three years. Aside from periodic dusting and changing the printwheel and ribbon, it has never had a moment of downtime or required any service.

Compared to other daisy wheel printers, the initial cost of the Diablo 630 is relatively high. However, amortized over the life of the unit, it begins to look like a bargain.

The Bottom Line

The Diablo 630 is an evolutionary continuation of the high quality line of Diablo daisy wheel printers. It is rugged and designed for heavy-duty use. The clever use of different cables on the API model for interfacing to either parallel or serial computer ports means that it can be used with virtually any computer and will be ready for use when you upgrade your current computer. The ECS/IBM version is the only letter quality printer that produces the entire IBM PC character set.



Front and top cover are easily removed for ribbon and type wheel changes.

Print quality is outstanding and printwheels are available for virtually any character set. The built-in buffer ensures that nothing will ever get lost, even if an error condition occurs.

The printer has excellent graphics capabilities (for a daisy wheel unit), however, the manual does not adequately describe the use of these features.

The excellent reliability of previous Diablo printers suggests that the 630 will have a long service life. However, service, if needed, is widely available. At around $2500 for printer, cable, printwheel, and ribbons, the 630 is not cheap, but given its expected long life, it may well be a best buy. □

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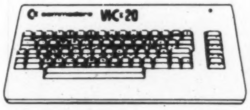

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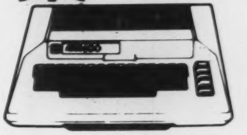

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9-Track Tape Drives For The Apple

Stephen Arrants

The ability to exchange data with larger computers opens up a new world of attractive applications for the Apple user. Until recently, floppy disks and Winchester drives offered the only reliable storage and retrieval media.

If a business owner wished to buy or rent mailing lists, he was faced with a dilemma. Few companies offer mailing lists or other data on Apple compatible media. The U.S. government, for example, offers a seemingly endless supply of data on nine-track tape. The FAA and FCC routinely make their files available for a small copying charge. The complete directory of the new nine-digit zip codes may be borrowed at no charge from the U.S. Postal Service.

Almost any federal data except that concerning national security, matters of personal privacy, or proprietary information is available for a reasonable fee. For an additional charge you may request a subset of the data based on income, residence, age or almost any other category. Information on government data and software is available from the National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22161.

Many private companies such as magazine publishers, polling organizations, universities, and research bureaus also offer mailing lists on magnetic tape.

An Apple with a magnetic tape drive is ideal for data collection in scientific, commercial and educational situations, or for data reduction and analysis projects in these environments.

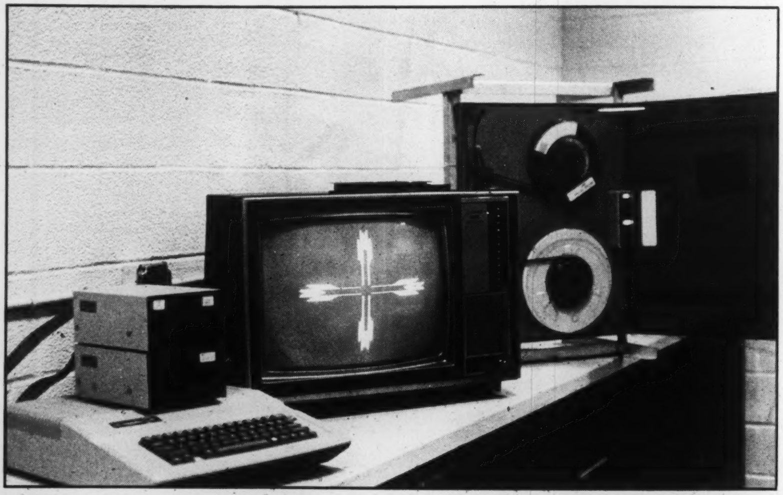
At less than $1 per megabyte, magnetic tape is a reliable, reusable medium for archival storage, hard disk backup, and general bulk data storage. Data storage and retrieval time with a nine-track drive are speeded up to almost 20 times faster than those achieved by an Apple disk drive. For example, BLOADing the 8K hi-res buffers used in the photographs takes about nine seconds with the Apple drive. Loading from a medium speed (25 IPS) tape takes *less than 0.5 seconds.*

Electrovalue Industrial Inc. is a six-year-old firm specializing in the purchase of quality commercial and industrial excess inventory items for resale to computer hobbyists. We recently discovered that this company which leases space in the Creative Computing building offers a unique product designed to afford data interchangeability among the Apple, minicomputers and large mainframes.

Electrovalue's Apple 9-Track Tape Drive consists of an industry standard tape drive with Apple adapter and with cables to a small controller card. The drives are compatible with the Apple II, Apple II+, and the Apple IIe, as well as with Apple look-alikes such as the Franklin Ace. They do not run with the Apple III.

The controller plugs into any available slot and performs all the necessary data transfer, control and formatting functions. This allows easy reading and writing of tapes via simple CALLs from Basic and/or assembly language programs. A Pascal version is under development.

Two drives currently offered by Electrovalue differ primarily in tape speed and the maximum diameter reel which may be mounted. The full size drives read and write tape at 25 IPS and handle any size reel up to the largest (10.5″). The smaller size drives run at



The Electrovalue drive in operation.

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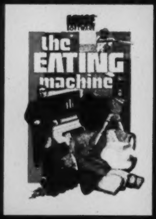

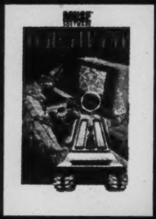

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Tape Drive, continued...

18.75 IPS and take up to a 7" reel.

Half-inch nine-track tape comes on standard removable reels. Tape length can vary, depending on the user's needs, from 200 feet to 3600 feet. Quantity prices for ten reels range from approximately $7 to $27 dollars. An explanation of how data is formatted on tape will show how this drive provides an inexpensive method of data storage.

How It Works

Two nine-track recording formats are common today: 800 BPI (bytes per inch) and 1600 BPI. The Apple drives can read and write only the 800 BPI format, which is unfortunate, since 1600 BPI format provides twice the storage capacity and is more popular than the 800 BPI tape. This drawback is offset by several factors: 800 BPI drives are less expensive, many of the drives in commercial use are capable of dual-density 800/1600 BPI operation, service bureaus offer inexpensive 1600 to 800 BPI conversion, and popular sources of data offer both formats.

Data are written on tape in blocks of 9-bit characters (an 8-bit byte and an automatically generated parity bit), hence the term nine-track. Collections of blocks are separated into files which are delineated by special blocks called EOF (End of File) markers. Each block also contains special characters used to check the data. These are generated by the controller when writing and checked when reading.

The length of the data blocks written on tape varies, depending on the application. The ANSI standard for 800 BPI defines a maximum block size of 2K (2048 characters), but in practice this is often exceeded. The Electrovalue interface can easily handle block lengths of up to 16K.

Software

The firmware I/O routines provide a versatile, application independent means of accessing the tape drive. Electrovalue provides additional programs written in Applesoft to help users get the system up and running. The Demo program transfers ASCII files from tape to screen, disk, or printer and vice versa. It handles up to 100 tape files and allows the user to specify block size when going from disk to tape.

I found this program slower than I would have expected. This was traced to the programmer's use of GET A$ and PRINT A$ for character handling. All actual I/O transfers between tape and memory ran at full speed—up to 36,000 CPS with a 25 IPS tape drive. Electrovalue is rewriting the character handling routine in assembly language and adding EBCDIC-ASCII conversion, two desirable improvements to a very versatile program.

The Diagnostic program reads and writes blocks of random data and performs other operations to check drive operation, controller, and ROM resident firmware. It runs quickly and provided excellent information when I forced an error by inserting a piece of paper between the tape and the read/write head.

Finally, a Basic Subroutine package provides a way to access quickly and easily all the tape drive functions from Basic. It contains a short application program in the form of a test which calls an integrated set of Basic subroutines. After reading the documentation, I suggest you study a listing of this program to see examples of tape drive programming.

Documentation

The documentation is clearly written and extensive in scope and technical content. Don't be put off by the three-ring binder and line printing. Electrovalue prefers to maintain documentation on a word processing system in order to be able to make quick updates.

Included with the documentation are a copy of the drive manufacturer's technical manual, a review of magnetic tape format and use, a thorough description of each of the firmware I/O routines with examples, schematic diagrams of the controller and adapter boards, installation procedure, and listings of the three sample programs. After a session with the documentation, you will have enough information to get the system up and running.

A new, full size 25 IPS drive with integrated controller is $3000. A smaller and slower drive is $1800. Used, refurbished drives are available from time to time at lower prices. Drives which are compatible with Electrovalue's controller are made by Cipher, Digi-Data, Kennedy, Perkin-Elmer, Pertec, Wangco, and others.

If you have your own drive, the controller along with system cables, documentation, and software is available separately for $900. At these prices, not every Apple owner will be able to afford such a drive. However, for those users who need nine-track compatibility with other computers, who need reliable data backup, or who use Apples for large scale data collection, this is a cost-effective alternative to other storage media. Commercial minicomputer magnetic tape controllers alone sell for about $2500.

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Inhome Keyboard for the Atari 400

creative
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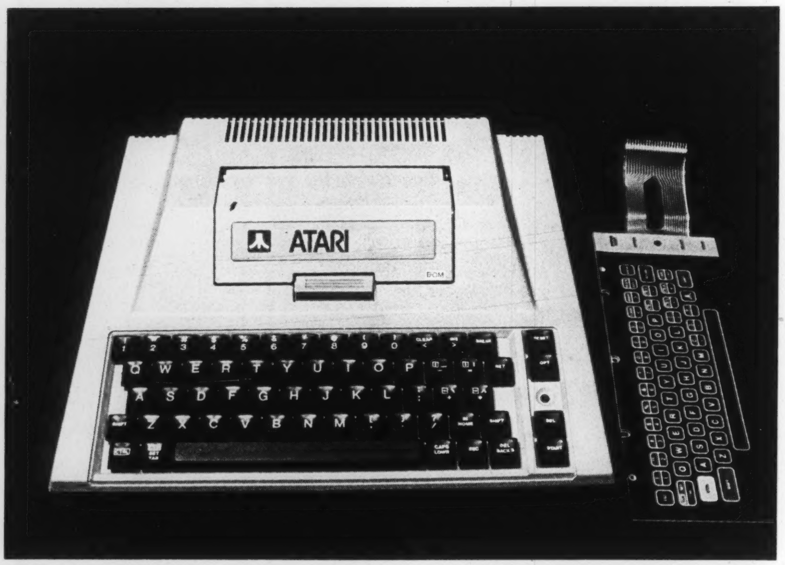
Stroke of Genius

Herbert Sandler

Necessity may not have mothered this invention, but convenience and ease were certainly parties to the conception. Inhome Software has filled a gap with a sturdy, full-stroke keyboard that substitutes for the membrane original on the Atari 400 computer. I installed the keyboard in about 20 minutes using only a screwdriver.

Although this crowning of the 400 does not quite make an 800 (it might be dubbed a 599), at $105 it is a reasonable upgrade.

When I considered a small computer for our family's recreational and entry-level use, I narrowed the choice to three machines: the Vic 20, TI 99/4A and Atari 400. The first two have full-stroke keyboards, with a feel similar to that of a typewriter, while the Atari has a flat, printed board (Atari calls it a monopanel).



Caveats About The Keyboard

The 400 was appealing in its superior graphics, sound and game adaptability and its 40-column display. Its big brother, the 800, had a "normal" keyboard and a second cartridge compartment but at double the price, and with nearly the same interior and output, it seemed less of a value. A several hundred dollars savings buys a great deal of software. So, disregarding caveats about the plastic membrane keyboard, I brought home an Atari 400. I have been very content with the choice—except that the keyboard was truly a pain to use.

The printed mylar panel is peanut-butter and Dr. Pepper-proof. It does almost everything that the 800 does and yet . . .

I found myself poised above the flat quasi-keyboard with, switches on, in the full flush of creativity knowing that I cannot pounce upon the keys. Instead, I had to descend purposefully, adjusting

Herbert Sandler, 28-45 Clearview Exp., Bayside, NY 11360.

programmer s

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My wife, an expert on a heavyweight office typewriter, nearly mutinied after being introduced to the printed laminate of the 400. It is not friendly to the touch typist because the fingers cannot distinguish the home keys. And the lack of a sense of detent restrains rapid typing.

When programming the computer, "entering" the commands suits the action better than "punching them in." However, we did not intend to displace the office Selectric, and we have been satisfied with the computing ability of the 400 aftermarket.

Along comes an aftermarket improvement to raise an itch of dissatisfaction. Merely replace the membrane keyboard of the Atari 400 with Inhome Software's B Key 400 kit and your problems are solved, the manufacturer claims.

Replace the membrane keyboard of the Atari 400 with the B Key 400 kit and your problems are solved.

I was a bit skeptical, but I brought home the new keyboard with anticipation. The keyboard package consists of a printed circuit board with 61 individual spring switches connected to a flat cable and a packet of attractive, contoured keycaps. The four-page instruction manual, though adequate, needs larger and clearer illustrations; everything seems to have been crowded toward the tops of the pages.

Installing The Keyboard

The operation started smoothly. You remove the top of the computer, which is held on by four Phillips-head screws. Then you trespass into the interior (which will void the warranty) and disconnect the ribbon cable from the computer to the membrane keyboard. You maneuver the keyboard out of the top cover and put it away for the relic collection.

Next, you plug in the new keyboard using its own ribbon cable. And, as forewarned in the manual, you need a third and fourth hand to steady the machine while you hold aside wiring and wiggling home the cable assembly. A strong flashlight or lamp makes the work a bit easier. The new cable pins (really wire ends) are not as substantial or manageable as the flat, stiff prongs of the original. After some anxious moments, however, a firm, persistent grip accomplishes the coupling.

You fit the new keyboard, with the 61 switches exposed, into place over the cable assembly, and reattach the top of the computer. I was eager to confirm the correct installation; I switched the unit on and pressed a few unmarked keys. They worked, and I haven't squeezed a laminated keyboard since.

The last step calls for installation of the keycaps. By moving five of the keys (CTRL, CLR/SET TAB, CAPS/LOWER, ESC and DEL/BACKS) to either side of the spacebar as on a professional keyboard, the designers have been able to spread out the alphanumerics a needed couple of inches. The keycaps are full-sized, contoured, and quite receptive to touch typing. The materials seem durable enough to support the manufacturer's claim of a life of one million operations.

I have a few minor gripes. The keys, and especially the spacebar, rattle a bit (though no worse than the keyboard of the Atari 800 and many others). The shift keys are the same size as all the others and are placed inconspicuously. The return key, too, is now smaller, but at least it protrudes a bit at the end of its row.

It would be nice to have some of the keys color-coded. The control key could be color-coordinated with other keys related to it. I may try to color-mark the RETURN and SHIFT keys with a small stick-on dot label and dampen the space bar clatter with a bit of felt.

Keyboard Enhancement Kits

The Atari 400, of course, isn't the only model with a plastic membrane top. Users of the extremely popular Timex/Sinclair 1000 computers have to contend with an even smaller panel keyboard. Perhaps a dozen "keyboard enhancement" kits are now available to them, ranging from a plastic overlay with finger-guiding holes to full-strike conversions in cabinets large enough to house both computer and add-on RAM circuits. This wide array of aftermarket equipment has been fostered by suppliers from Britain, home of the Sinclair computer.

Inhome Software is not the only manufacturer offering an upgrade for the Atari 400 keyboard. RCE of Grant's Pass, OR, has also entered the market with a pair of keyboard and calculator options under the Commander label. These are separate wood-trimmed enclosures with eight feet of connecting cable. They can be used without disturbing the original keyboard of the Atari 400. The numeric keypad model permits calculator operations without involving the computer keyboard. Installation is a bit more involved for the two models, and with their deluxe features, they are priced higher than the Inhome conversion.

Meanwhile, back at the Sunnyvale, California ranch, there are rumors that Atari has seen the light and plans to introduce an intermediate model, between the 400 and the 800, with an upgraded full-stroke keyboard.

That doesn't ease the way for present users of the 400, however, which brings us to the next question.

Is the B Key 400 keyboard worth the price and the effort to install it? I would say yes: for the touch typist typing becomes more pleasant and accurate. My wife says the new keyboard has a softer and more effortless touch than her IBM office typewriter. The keyboard may not be a dead-ringer for the 800 (or as elegant as other microcomputers), but ergonomically speaking, it has the right stuff.

The solid-looking console is handsome enough with its chocolate-brown molded keycaps. The B Key 400 does well. In fact, it is inviting the family back to the keyboard, where they are in touch once again.

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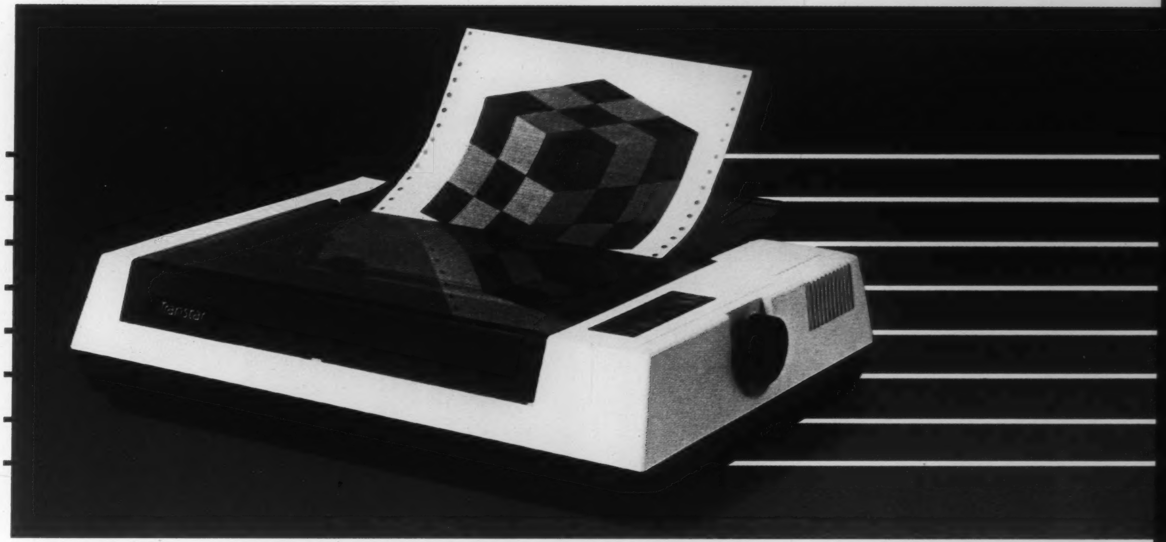

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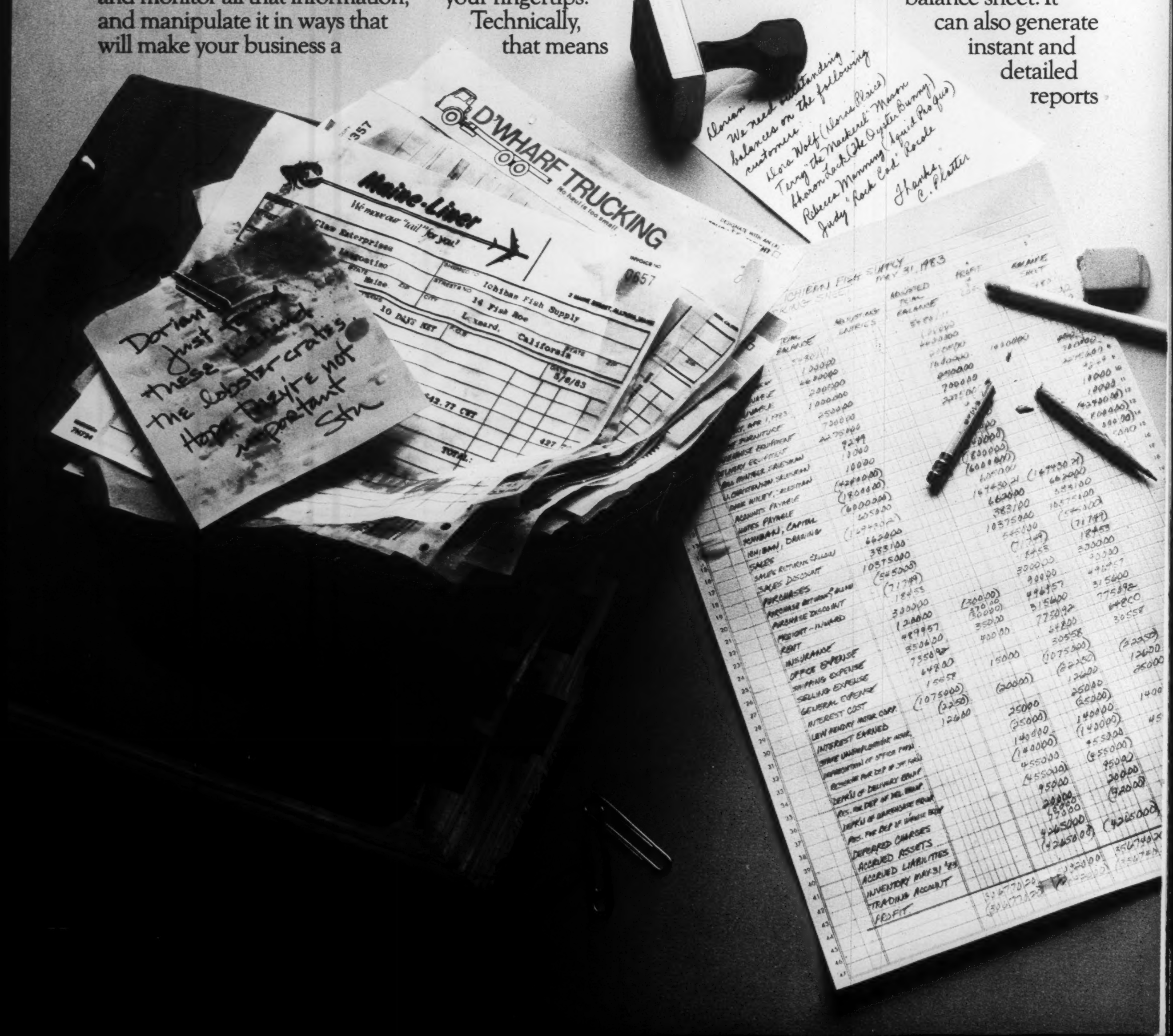

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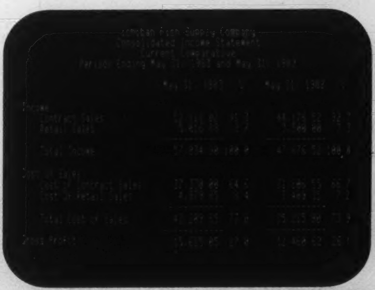

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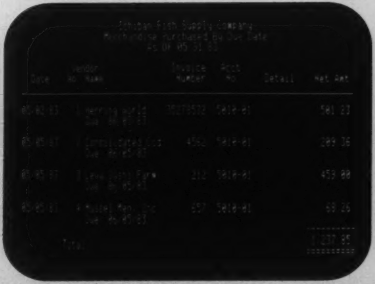

It can also allow you to take full advantage of merchandise discounts. So you'll know whom to pay, when to pay, how much to pay—and save a lot of clams in the process.

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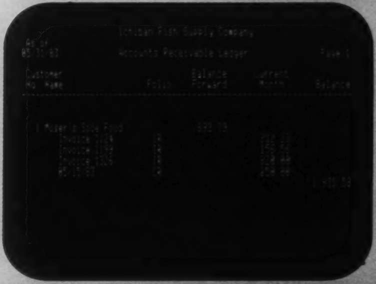
Add an Apple Dot Matrix or Daisywheel printer to your Apple III, and you can print out your entire balance sheet in minutes.

Or any number of reports, from cash receipts to payroll ledger to income. You can even print checks and customer statements.

The impressively professional results will make an important statement to everyone you deal with—including your banker.

More ways Apples pay.

There are more people in more places doing more things with Apples than with any other personal computer in the world.



To avoid fishy transactions, you can instantly display customer's payments, charges and current balance. In this case, a few more cans of tuna would put Mr. Moser over his $2,000 limit.

Because for one thing, there's more software for Apples than for any other personal computer in the world. So the same Apple that handles all your accounting needs can also handle financial spreadsheets, word processing and electronic filing.

You'll also find programs that are designed specifically for your kind of business. Be it dentistry, architecture or swine herding.

Of course, the best way to learn all the ways Apples can help you make better business decisions is to visit any one of over 1500 authorized Apple dealers.

So drop in. For a full account.

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CIRCLE 109 ON READER SERVICE CARD

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A Tough Act To Follow. Frankly, an Okidata printer is the best printer on the market today. Why? We pack more performance features per dollar into our dot matrix printers than anybody. Bar none. Data processing at speeds from 80 to an incredible 350 characters per second. Exceptional letter quality printing at three times the speed of most daisywheels. Draft and color printing. High resolution all points addressable graphics for charts, graphs, illustrations and photos. Even alternate character sets for self-designed typefaces and symbols. (Print a G-clef, if you like.)

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Perfect Harmony With Your Computer. Every Okidata printer works in concert with the major names in personal computers. Better and faster, in fact, than the major computer name printers. (Which, by the way, aren't even made by the major computer companies.)

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CIRCLE 201 ON READER SERVICE CARD

A Replacement Keyboard For The Color Computer

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equipment
evaluation

The Real Thing

Radio Shack
TRS-80
COLOR COMPUTER

Owen Linzmayer

Ask any Color Computer owner what one thing he would like to change about his system, and the response is most likely to be "that %@1#!@ keyboard." Take heart, all of you frustrated touch typists, relief is at hand with the Super-Pro replacement keyboard from Mark Data Products. The "chiclet" keyboard is now a thing of the past.

Carefully packaged in a sturdy cardboard box, the Super-Pro keyboard comes complete with a plastic dress panel and a single sheet of instructions. While one page of documentation may not seem like enough, remember that the entire replacement operation is painless and takes less than five minutes to complete.

After taking the new keyboard out of the box and removing the seven screws that secure the computer lid, you are ready to begin. The detailed instructions are numbered for easy step-by-step reference. Although there are no illustrations, each direction is spelled out quite thoroughly.

To install the Super-Pro keyboard, you must follow only a few simple procedures: remove the existing keyboard by detaching a small cable, clip off the top portion of an unused support post, place the new keyboard into po-

The advantages of a full-stroke keyboard become apparent even before you begin to type on it.

creative computing
HARDWARE PROFILE

Product: Super-Pro replacement keyboard

System: TRS-80 Color Computer or TDP-100

Cost: $69.95 for keyboard,
$4.95 for plug adaptor

Manufacturer:
Mark Data Products
24001 Alicia Pkwy., No. 226
Mission Viejo, CA 92691
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	WordStar Professional, 4 Pak, 3 above + StarIndex		(Special)	$ 895	$429
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	Multitool Financial	MSDOS	NEW!	$ 100	$ 75
	Multitool Budget	MSDOS	NEW!	$ 150	$115
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	Pascal Compiler	MSDOS	NEW!	$ 350	$260
	C Compiler	MSDOS	NEW!	$ 500	$375
	BASIC Compiler	MSDOS	NEW!	$ 395	$295
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	MICROCOM Microterminal		$ 100	$ 65
	MICROSTUF Crosstalk		$ 195	$129
	NAGY SYSTEMS Copy PC, Back and Utilities		$ 35	$ 25
	NORELL DATA System Back		$ 50	$ 39
	NORTON Norton Utilities 14 powerful programs, 3 disks		$ 80	$ 65

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	Oil Barons	NEW!	$ 100	$ 75
	ARMONK Executive Suite		$ 40	$ 27
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	Zork I or Zork II or Zork III, each		$ 40	$ 29
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	MICROSOFT Flight Simulator (by Sub-Logic)	NEW!	$ 50	$ 35
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	SIR-TECH Wizardry Sceneno #1		$ 60	$ 40
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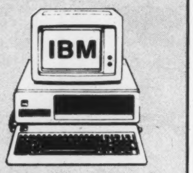

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	Above Combo Plus, 256K, S P C		$ 695	$ 525
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MBI	Monte Carlo 64K Five Function (to 1000K)		$ 625	$ 395
Q.C.S.	Big Blue, Z80 CPU plus five functions		$ 595	$ 449
QUADRAM CORPORATION				
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	Quadboard 64K, expandable to 256K, 4 function board		$ 395	$ 285
★	Quadboard 256K, four function board		$ 595	$ 425
	Quad 512 + , 64K plus serial port		$ 325	$ 275
	Quad 512 + , 256K plus serial port		$ 550	$ 440
	Quad 512 + , 512K plus serial port		$ 895	$ 675
	Quadcolor I		$ 295	$ 235
	Microfazer, w Copy, Par Par, 8K, #MP8 w Power Supply		$ 189	$ 139
	Microfazer, w Copy, Par Par, 64K, #MP64 w Power Supply		$ 319	$ 235
	Microfazer, w Copy, Par Par, 128K, #MP128 w Power Supply		$ 465	$ 345
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MAYNARD Floppy Drive Control Board, for up to 4 drives.		$ 195	$ 165
	same with Serial Port	$ 325	$ 235
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	9x9 Dot Matrix, 100cps, 2.3K, Gemini 15"		$ 649	$ 469
	IBM-PC to Epson or Star Micronics Cable		$ 60	$ 35
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	COMREX Comriter CR-1, I F, 200 wpm	Limited Special	$1199	$ 645
	Comriter Tractor Feed for CR-1		$ 118	$ 99
	SMITH-CORONA TPI Printer specify serial or parallel I F	Special	$ 899	$ 499
	TPI Tractor Feed		$ 149	$ 129

SUPPLIES: Tractor Feed Paper, Ribbons, Heads, Qume Daisy Wheels and Ribbons.

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ASHTON-TATE, dBase II		$ 700	$ 439
INFOCOM, Zork I or Zork II or Zork III or Starcross, each		$ 50	$ 39
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MailMerge™ (Call on 2 Pak, 3 Pak and others)		$ 250	$ 129
SpellStar™		$ 250	$ 129
WordStar Professional, 4 Pak, 3 above + StarIndex		$ 895	$ 429
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ReportStar	NEW!	$ 350	$ 199
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Edit-80		$ 120	$ 80
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	AMDEK, 12" Green, #300G	$ 200	$ 159
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★	13" Color I, Composite	$ 379	$ 299
★	13" Color II, RGB, Hi Res (Ap. II, III & IBM-PC)	$ 529	$ 459
★	13" Color III, RGB, Commercial. (Ap. II, III)	$ 479	$ 399
	DVM, Color II or III to Apple II Interface	$ 199	$ 175
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	12" Color, Composite, Model JC1212M	$ 450	$ 349
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	QUADRAM, Quadchrome 12" RGB Color	$ 795	$ 565
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	12" Green, Model DM8112CX	$ 260	$ 199
	13" Color, Composite, Model DM6013	$ 470	$ 349
	TAXAN, RGB Vision I 380 Lines	$ 399	$ 339
	ZENITH, 12" Green, Model ZVM121	$ 150	$ 99

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HAYES, Micromodem II (for the Apple II)	$ 379	$ 275
Apple Terminal Program for Micromodem II	$ 100	$ 65
IBM-PC Smartcom II	$ 119	$ 89
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Smartmodem 300 (RS-232)	$ 289	$ 225
Smartmodem 1200 (RS-232)	$ 699	$ 535
Micromodem 100 (S-100 bus)	$ 399	$ 275
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MICROCOM, Micro Courier for Apple II	$ 250	$ 125
Micro Telegram for Apple II	$ 250	$ 125
NOVATION, Applecat II Modem, 300 BAUD	$ 389	$ 269
212 Apple Cat, 1200 BAUD	$ 725	$ 599
SIGNALMAN, Modem MKI (RS-232)	$ 99	$ 79
SSM, Transcend 1 for Apple II Data Comm.	$ 89	$ 69
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	DYSAN, 10 each, 5-1/4, SS, SD, (Apple, etc.)	$ 69	$ 39
	10 each, 5-1/4, DS, DD, 48T (IBM, H/P, etc.)	$ 89	$ 49
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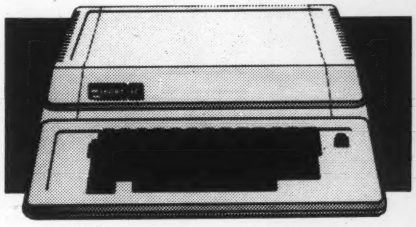

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APPLE IIe, STARTER SYSTEM BY APPLE (System A) 64K and 80 column Disk II with controller Apple Monitor III Monitor Stand	$1,895
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WARRANTY is 100% Parts and Labor for 90 days by us.

To substitute or delete drive on System B, subtract $245 and add drive price (System D)

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	★A70, 5-1/4", 286K Disk Drive	$ 599	$ 299
	Controller for A40 or A70	$ 100	$ 79
	Filer, Disk Utility Software	$ 20	$ 15
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	Duet, 5", Double Sided, 320K Half Height	$ 420	$ 329
	Quartet, 5", 2 Duets Side by Side or Standard Cabinet	$ 715	$ 575
	Controller Card	$ 89	$ 75
	★V1000 Dual 8", Std. Format w/Controller, Complete	$2195	$1295
TEAC	✱143K Disk Drive, 1/2 High	$ 379	$ 279
	Controller Card.	$ 89	$ 69
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HARDWARE

for Apple II

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★ **ALS**, ADDRam (II+)	16K	$ 100	$ 69
★ **Microsoft**, RAMCard (II+)	16K	$ 100	$ 79
★ **Saturn Systems**, RAM Card (II+)	32K	$ 249	$169
RAM Card (II+)	64K	$ 425	$319
RAM Card II(+)	128K	$ 599	$459
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Soft Video Switch (II+)	$ 35	$ 25
Enhancer II (II+)	$ 149	$ 99
Function Strip (II+)	$ 79	$ 59
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Vista, Vision 80	$ 289	$199

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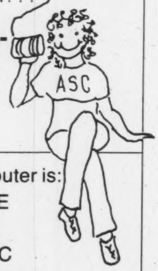

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sition, secure the dress panel on the computer lid, and screw everything back together. That's it! No soldering, no traces to cut, and no rewiring. In fact, you do nothing to alter your computer in any way. You may remove the Super-Pro and replace it with the original keyboard at any time.

The advantages of a full-stroke keyboard become apparent even before you begin to type on it. Most noticeably, your Color Computer instantly takes on the appearance of a professional computer. The sleek new look is comparable to that of an Apple.

Unlike some of the other replacement keyboard kits available for the Color Computer, the Mark Data kit comes with a plastic dress panel designed and colored to complement the system. My only complaint with the panel is that unless you use high quality tape to secure it on the inside of the computer, it can be a little bit flimsy when pushed on. To remedy this, you can take more effective measures such as gluing the dress panel in place. Unfortunately, this makes the replacement permanent.

In addition to looking better with the well-fitted keyboard installed, the Color Computer also performs very well. The key contacts are solid, and each touch of a key is smooth—the response is very good. There is no annoying keybounce as there was on the early TRS-80 Model I computers. The Super-Pro keyboard makes typing on the Color Computer a breeze. Gone are the days when your fingers were constantly slipping off of the toy-like keys of the original keyboard.

Take note: Color Computers manufactured by Tandy after October of 1982 are of a newer style and require a special $4.95 plug adapter (also available from Mark Data). The new boards are commonly referred to as F versions, but the letters that are actually printed on the board itself are ET. Check for this before ordering.

This American-made product costs $69.95 and comes with a 90-day warranty. If you are serious about your Color Computer, you cannot afford to be without a "real" keyboard of this quality. ☐

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A Cooling Fan For The Color Computer

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No More Hot CoCo

Owen Linzmayer

"Aaaaarrgh," I shouted after finding my Color Computer in a state of irrevocable rigor mortis. I had just spent hours at the keyboard typing an important document and the darn computer died on me. I soon found the cause of the crashed system: the heat generated by the computer had triggered a malfunction which locked up the keyboard. Something obviously had to be done. Thank goodness for CoCo-Cooler, a cooling fan from Rem Industries.

Even during normal operations, the large transformer inside of the Color Computer gives off a great deal of heat. If you leave the power on for any length of time, say an hour, the case of the computer becomes quite hot to the touch. This increase in temperature is not healthy for the delicate electronic components inside the Color Computer. The CoCo-Cooler remedies this situation for under $40.

Molded out of high-impact black plastic, the CoCo-Cooler attaches to the Color Computer on top of the vent holes in the left rear corner of the case. Installation of the unit is so simple that even the least technically inclined user should be able to accomplish it without a hitch.

After taking the CoCo-Cooler out of its box, you remove the protective paper from the adhesive tape and firmly press the unit onto the side of the computer casing. That's it. Once positioned correctly, the fan is held in place by the thin strips of adhesive.

creative computing
HARDWARE PROFILE
Product: CoCo-Cooler
System: TRS-80 Color Computer
Catalog No.: AM501
Price: $39.95
Dimensions (h x w x d): 4" x 6.5" x 5.75"
Manufacturer:
Rem Industries, Inc.
9420 "B" Lurline Ave.
Chatsworth, CA 91311
(213) 341-3719

Although the unit is not the same color as the computer, it does not look out of place on the system as it is designed to fit snugly on the case. The CoCo-Cooler has its own rubber support feet so no additional stress is placed on the computer housing itself.

The Cooler has an independent on/off button located to the rear of the unit which means that you can shut off the fan but continue to use the computer. The fan does not draw current from the computer, instead it has a separate seven-foot power cord.

When operating, the CoCo-Cooler makes very little noise. If you turn on the unit when you turn on the computer, you will notice that the case never becomes the slightest bit warm. On the other hand, if the computer starts to heat up and you then turn on the fan, the machine is cooled to a satisfactory temperature within minutes. Not only is the power transformer cooled, the entire computer enjoys the soothing benefits of the powerful little fan.

If you use your Color Computer for serious functions such as word processing, programming, or setting high game scores, you should invest in a CoCo-Cooler. The reasonable price of $39.95 may save you from your next system crash and save wear and tear on your nerves at the same time. ☐

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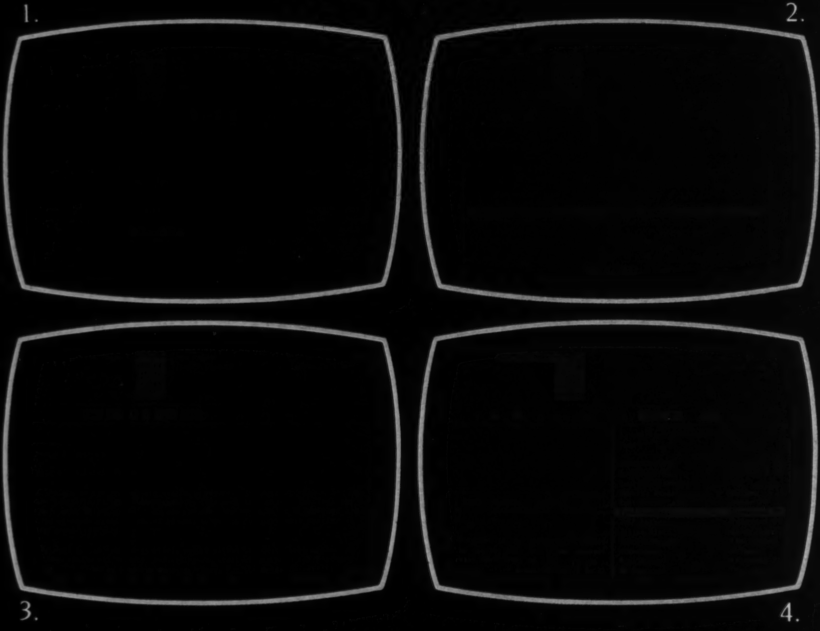

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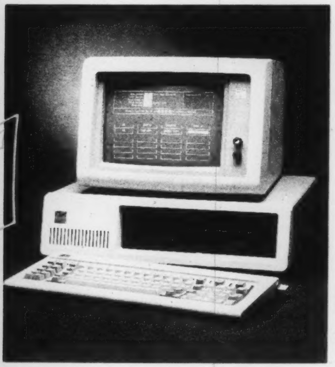

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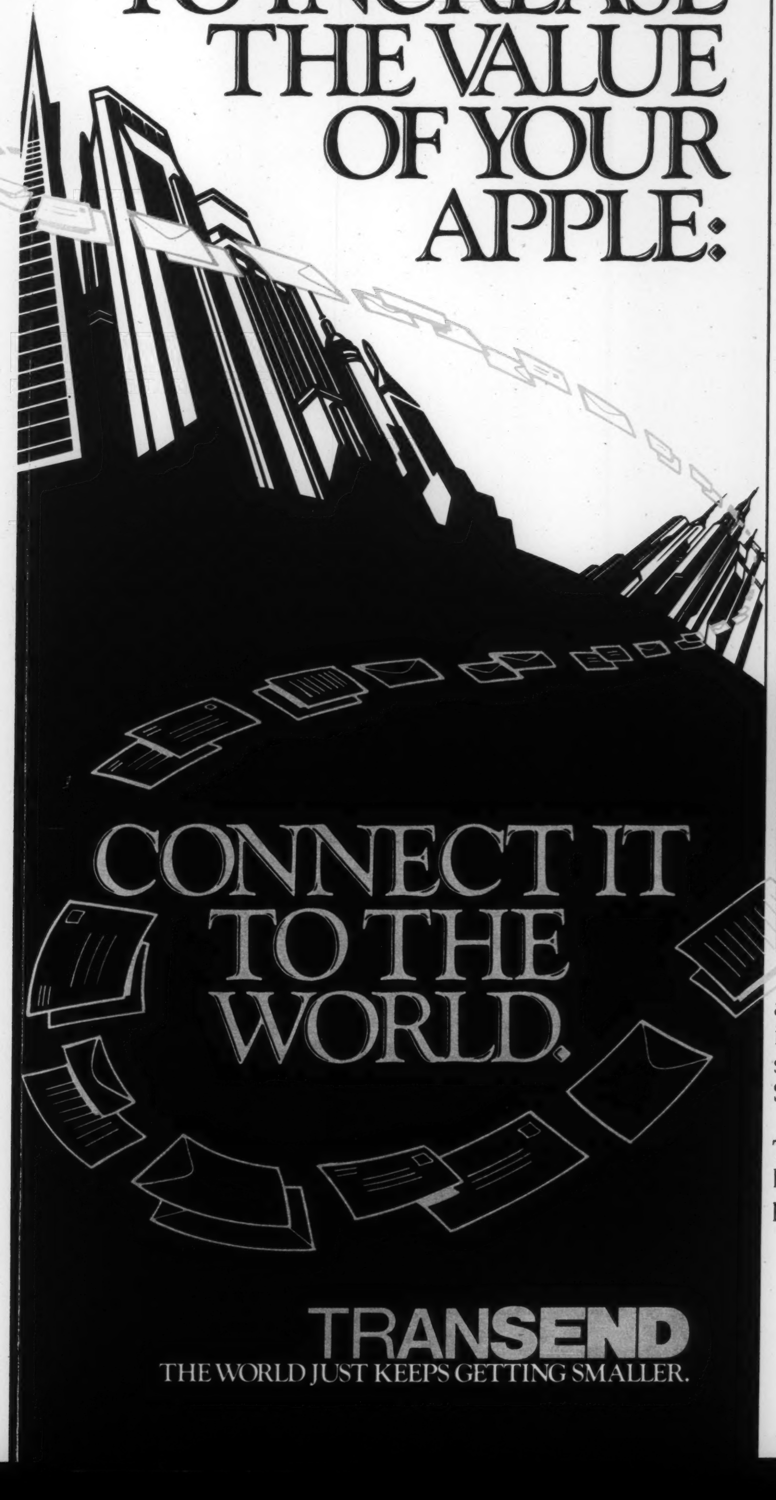
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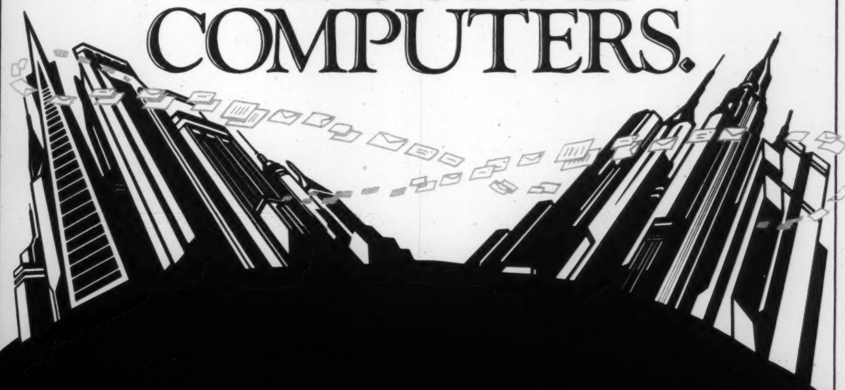

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Controller Update

Owen Linzmayer

The Summer Consumer Electronic Show (CES) held in Chicago during the first week of June held quite a few surprises. Computer related equipment was given an entire hall to itself due to the enormous number of new entrants in the field and a horde of new products to be displayed. While most of the attention was focused on game software, there was an amazing amount of interest paid to controllers. Following is a round-up of the new joysticks, track balls, and assorted other controllers.

Note: when we refer to a controller as being Atari compatible, that means that it will work with all Atari computers and game systems except the Atari 5200. It also works with any other computer or game system that can accept with or without an adapter the standard 9-pin plug used on the original Atari joystick such as Vic-20, Commodore 64, Panasonic, TI, Video Technology, Coleco, etc.

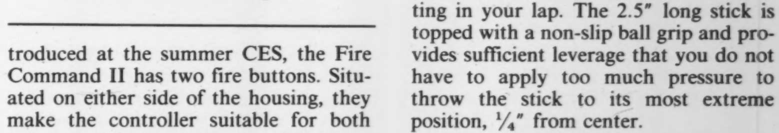
GIM Electronics
Fire Command II Joystick (Atari)

The Fire Command II is one of the most durable Atari replacement joysticks we have ever seen. The case is molded out of die-cast metal and weighs in at a whopping 4 pounds. While its large size is the most impressive thing about it, the Fire Command II also sports many other noteworthy features.

Like most of the new joysticks introduced at the summer CES, the Fire Command II has two fire buttons. Situated on either side of the housing, they make the controller suitable for both left- and right-handed action. The large $\frac{7}{8}''$ red buttons activate arcade quality leaf switches for quick and accurate firing. Both buttons are clearly identified by large stickers marked FIRE.

Designed for tabletop use, the Fire Command II also works well when sitting in your lap. The 2.5″ long stick is topped with a non-slip ball grip and provides sufficient leverage that you do not have to apply too much pressure to throw the stick to its most extreme position, $\frac{1}{4}''$ from center.

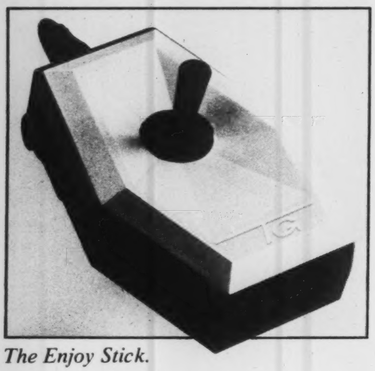
At a rather high price of $49.95, the Fire Command II is as close as you can get to a real arcade controller without ripping one out of a coin-op game.



The Fire Command II.

TG Products Enjoy Stick (Atari)

Long recognized as one of the leading manufacturers of quality joysticks for the Apple computers, TG Products has recently entered the highly competitive Atari replacement joystick market. Their newest offering, the Enjoy Stick, is a departure from the norm in that it does not use a series of switches to determine the position of the stick, but uses, instead, potentiometers.



The Enjoy Stick.

Like most Apple controllers, the Enjoy Stick uses potentiometers, resistors that change value when the central axis is turned. Normal switches produce digital readings, whereas pots give a wide range of analog values. Since the Atari understands only the nine different digital values of switch-type joysticks, the Enjoy Stick converts its precise analog readings into digital ones.

People familiar with potentiometer joysticks will probably fall in love with the Enjoy Stick. But if you have become accustomed to switch controllers, the feel of the pot stick may be strange. The short stick has a diameter of $^3/_8''$ and returns to the center when released.

The unique shape of the Enjoy Stick makes it ideal for extended hand-held use. It fits comfortably in the palm of the hand and boasts very smooth edges all around its base. By pressing on the two tabs at the front of the unit, you can release the piece of plastic in which the fire button is mounted. This allows you to change the position of the button to either the front left or front right. You can, therefore, choose between using your thumb or index finger to press the button. The fire button itself is $^1/_2''$ in diameter, but offers no tactile response when pressed.

GIVE UP JERK!
COMPUTER GAMES
ATARI
chase

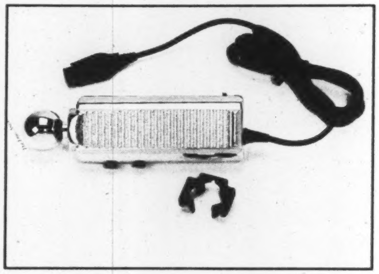
"Sir, why don't you try the board games down the aisle?"

The Enjoy Stick is a premium controller that carries a premium pricetag: $34.95 per stick. While this may seem quite expensive, you should keep in mind that the Enjoy Stick has a full coverage, 5-year warranty. That tells you how much confidence TG has in their products.

Zircon Z-Stick (Atari)

The Video Command joystick from Zircon has received a great deal of coverage in the past for its innovative design. Now the people at Zircon have added several new features to this unique controller and renamed it the Z-Stick. The result is a fascinating joystick for the Atari.

The Z-Stick has a long, tubular body that is gripped in one hand while the other hand manipulates a 1 $^1/_8''$ triangular "knob" at the top of the unit. The Z-Stick is equally comfortable in either the right or left hand.



The Z-Stick.

There are two $^3/_8''$ buttons on the front of the grip which are controlled with your index and middle fingers. The top button is a standard action button which provides tactile response when pressed. By sliding the small switch near the bottom of the base, you can engage the auto-fire feature. As long as you hold the top button down, a continuous stream of positive signals is sent to the Atari.

Below the fire button is a second button called the speed control. When pressed, it is supposed to slow down the player's action on the screen by oscillating the signals to the computer. The theory is that by sending signals only half as often as normal, the speed is slowed down. This is not necessarily true with all games. For instance, if your Pac-Man is headed left down a corridor, it will not change direction or speed unless you move the joystick to a position other than left. Slowing down the rate of the "left" pulses in no way affects the speed at which the Pac-Man character moves. On the other hand, it works as intended with shoot 'em up games such as Defender.

As with its predecessor, the Video

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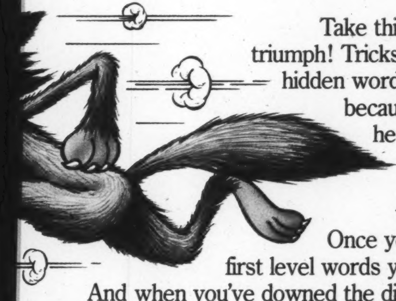
TRICKSTER COYOTE.



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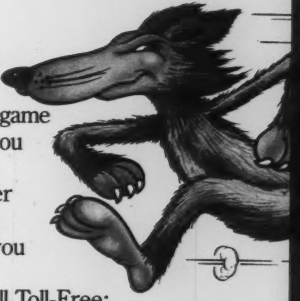
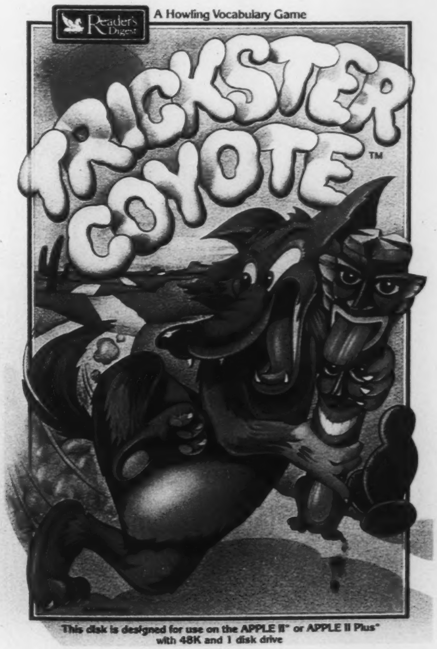
Warranty information available upon request by writing to: Reader's Digest Services, Inc., Microcomputer Software Division, Pleasantville, New York 10570.

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Command, the Z-Stick offers fast maneuverability and accurate control with all games. The Z-Stick also comes with a removable collar that locks out diagonal movement, thus improving gameplay of maze programs such as *Ms. Pac-Man.* Our Video Command stick has suffered months of rigorous play and is still serving us well. We can only hope that the $19.95 Z-Stick holds up as well.

Konami JE 501 Joystick (Atari)

Best known for their coin-op arcade games Amidar, Time Pilot, and Rock'n'Rope, Konami has recently introduced a new Atari compatible joystick. Our initial impression is that they should stick to creating video games.

The JE 501 is a tabletop, eight-direction joystick. The light-weight plastic base does not provide enough surface area to stabilize the unit adequately, and it is too big to be held comfortably in one hand. The stick measures $\frac{7}{8}$" in diameter and is 3.5" long.

The Konami JE 501 has only one fire button, located on the top of the stick. While many people prefer the fire button in this postion, others enjoy having two buttons, one on the top of the stick, and the other on the base. The red $\frac{1}{2}$" button does not provide tactile feedback but is very responsive.

We were not paricularly impressed with the Konami JE 501 because it didn't live up to our expectations of what a new joystick should offer. In a market that is almost saturated, a new product must be either unique or superior. Unfortunately, the Konami JE 501 is neither.

Wico Boss Joystick (Atari)

Wico has been manufacturing arcade joysticks since the dawn of the coin-op video games era. In recent years it has turned its talents to providing quality controllers for home systems. Wico's newest Atari compatible stick, The Boss, follows in the footsteps of the immensely popular Wico Command Control joystick.

The Boss.

The black and white base of The Boss resembles the base found on other Wico controllers, but I have been assured by company representatives that the innards are sufficiently different to warrant being called a new product. "A heavy duty printed circuit board and sensitive leaf-switches provide instant contact for superb accuracy and speed,"—at least that is what the Wico flyer says about The Boss.

The stick of The Boss is best described as a molded pistol grip. While some of the younger testers liked the non-slip grip, those of us with more adult-sized hands found it a bit small. The grip itself can be rotated a full 360° indefinitely. This should not cause too much orientation confusion as the front of the stick is clearly identified.

Without suction cups, The Boss proves a bit shaky for one-handed tabletop play. There is a single square button located on the top of the pistol grip. While this button is extremely sensitive, it has a long throw. This means that although you don't need to, you may find yourself pressing the button too far, thus tiring out your trigger finger.

While the looks of The Boss are impressive, it appeals mainly to those who enjoy very responsive, specialized controllers. If you already have a Command Control stick, you don't really need to spend another $19.95 to buy The Boss unless you are an avid controller collector.

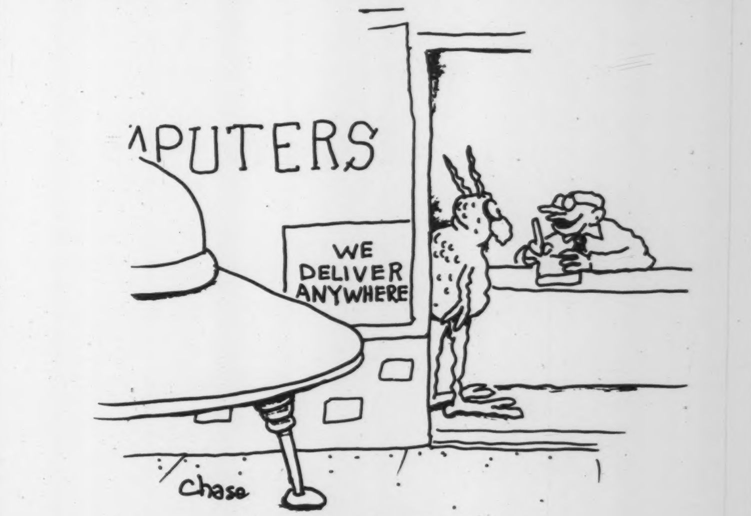
Championship Electronics Mini-Champ Joystick (Atari)

Much like its predecessor, the Super Champ, the most interesting thing about the Mini-Champ is its 4.5′ retractable cord. The Mini-Champ is also unique in that it is one of the only joysticks designed exclusively for small hands and children.

The Mini-Champ Joystick.

The cord of the Mini-Champ can be retracted into the circular base of the unit much like the power cords found on many vacuum cleaners. This feature allows you to let out as much or as little cable as you want, thus avoiding the jumble of wires that is so often associated with video game systems.

The Mini-Champ is a small hand-held



". . . and your mailing address, sir?"

joystick that uses four internal switches to determine up to eight directions of movement. There are three fire buttons on the Mini-Champ; two on the base, and one on the top of the control stick. The red $^3/_8$" buttons on the base are situated one on either side of the stick so that southpaws will be just as comfortable as righties. The larger rectangular button on top of the stick offers responsive action and tactile feedback.

As stated previously, the Mini-Champ is designed specially for smaller hands. The smooth pistol grip handle is perfect for preteens, and the manufacturers claim that it "increases a player's scoring performance by reducing fatigue." I don't know if I believe this, but the hand grip is certainly more comfortable than most of the others on the market.

The Mini-Champ is manufactured under the catalog number JC351. It has a standard 9 pin plug which means that it works with all systems that use Atari joysticks. With special adapters, also available from Championship Electronics, the Mini-Champ functions on both TI 99/4A and ColecoVision consoles. With a low retail price of $11.95, the Mini-Champ ranks as one of the most inexpensive, high-performance joysticks available.

Milton Bradley
Cosmic Commander Joystick (Atari)

Not your everyday run-of-the-mill joystick, the $40 Cosmic Commander controller comes complete with its own VCS cartridge, *Survival Run.* To call the Cosmic Commander a joystick isn't fair—it deserves at least to be called a controller—and a strange controller at that.

The Cosmic Commander is the first in a line of "theme" controllers from Milton Bradley. Each joystick in the series comes with its own cartridge. The gimmick is that not only do you get a new VCS game, but you also get a joystick specially designed to complement the theme of the game.

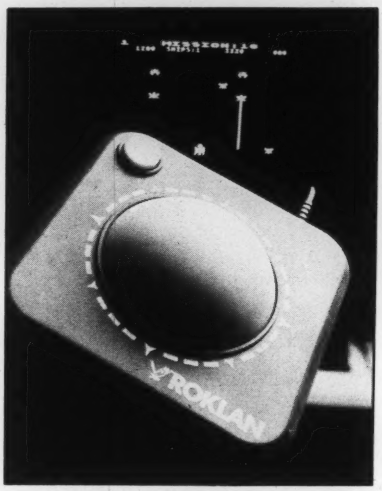
In *Survival Run,* the object is to fly through a scrolling 3-D maze and finally destroy a crab-like creature called the mothership. The mothership is located at the far end of the maze which means you must battle an almost endless onslaught of assorted meanies before you encounter the horrible crab. Flight Commander, the second theme joystick, gives you an airborne view of a countryside littered with tanks and anti-aircraft guns. You must avoid being shot down as you try to destroy enemy airplanes.

While both games are rather shallow, they do a good job of demonstrating the particular capabilities of the controllers. Unfortunately, neither of the games is captivating enough to warrant the purchase of these expensive joysticks.

Roklan Un-Roller Controller (Atari)

If I were to offer an award for the strangest controller ever invented, the new Roklan Un-Roller Controller would certainly win hands down.

At first glance the Roklan controller looks suspiciously like an oversized track ball, though the large yellow dome doesn't spin like a conventional roller controller. That is because the Roklan controller is like nothing you have ever seen before. Instead of gripping a stick, you place your palm on the textured globe and simply rock in any of the eight directions—no calluses, no aching fingers, no stick.



The Un-Roller Controller.

One selling point of this stickless controller is that it also improves hand circulation since no gripping is involved—big deal—how many arcaders do you know who have poor circulation? The non-slip surface helps reduce the force needed to control the globe but tends to get dirty after extended use.

Roklan representatives claim that the Un-Roller Controller works well with anything that normally uses a track ball. I disagree: one of the most appealing features of track balls is that momentum continues to spin the ball even after you have removed your hand.

The Un-Roller Controller works best as a tabletop unit. It is difficult to hold the controller in one hand and apply enough pressure to rock the globe at the same time. The single button is located in the upper lefthand corner of the base and clicks audibly when pressed.

Those people on the staff of *Creative Computing* who have had the opportunity to play with the Un-roller Controller commonly ask "Why?" I don't have the answer, but one of the associate editors commented that it may have something to do with a Freudian fixation. The suggested retail price is $49.95 a pair.

Newport Controls
Prostick II/III (Atari)

The newest offerings from Newport Controls are the Prostick II and Prostick

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III, both Atari compatible joysticks. These controllers offer something found on very few joysticks today: switchable gateplates.

You may be asking yourself "just what is a switchable gateplate?" It is a plastic collar around the base of the short stick that can be positioned in one of two ways. When the embossed arrow on the gateplate is pointing toward the number four on the face of the unit, the joystick cannot produce diagonal signals. This is supposed to increase the playability of games such as *Pac-Man* and *Donkey Kong* in which you may move only in the four compass directions. The eight-way setting offers the regular action. I find it a great advantage to have the diagonals blocked out as you do not have to move the joystick so precisely.

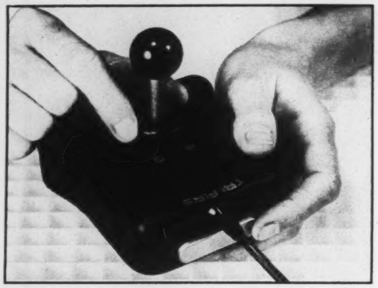
On the Prostick II there are two fire buttons located on the front piece of the unit. Neither of these offers tactile feedback, but they are well positioned so that you may use your index finger to activate them. The only difference between the Prostick II and the Prostick III is that the latter has a "trifire bar" located on the front of the base instead of two separate buttons.

Intended for use with the ColecoVision system, the Prostick III is a bit awkward to handle. When the left side of the tribar is pressed, it acts as fire button number one on the ColecoVision

JOYSTICKS

Manufacturer	Model/Name	Price	Size W×D×H	Table Top/ Hand Held	Potentiometer Resistance	Trim	Stick Size (in dia.)	Button Size (in dia.)	Button Placement	Tactile Feedback
Potentiometer-type										
A2D	2001	$44.95	3.0×3.5×2.0	Both	150K ohms	Yes	0.4	0.6 sq	Rear side	Yes
Astar International	Robo Stick-1	29.95	2.6×5.0×1.7	Both	75K	No	0.75	0.4	Both sides rear	No
BMP Enterprises	Joystick	59.95	4.8×2.5×1.6	Both	150K	No	0.7	0.4 sq	Top	Yes
CJM	Microstick	59.95	4.0×2.8×1.6	Table	110K	No	0.7	0.5 sq	Left top	No
Datamost	Joy Stick	59.95	2.1×5.0×1.8	Table	150K	No	0.75	0.3	Left top rear	No
Apple Computer	Joystick II	49.94	3.2×3.2×1.5	Both	150K	No	0.4	0.5 sq	Left top rear	Yes
Kraft	Color Computer Joystick	n/a	4.0×4.0×2.3	Hand	150K	Yes	0.4	0.3	Left rear	Yes
Kraft	Joystick	64.95	4.0×4.0×2.3	Table	150K	Yes	0.4	0.4 sq	Left top & rear side	Yes
Syntronics	Applestix	34.95	(1)							
TG Products	Enjoy Stick	34.95	n/a	Hand	n/a	No	0.4	0.5	Front right or left	No
TG Products	Super Joystick	59.95	5.0×3.2×1.7	Table	150K	Yes	0.4	0.6	Left top	No
Wico	Analog 50-1043	34.95	n/a	Both	500K	Yes	0.8	0.8	Left top	No
Zircon	Video Stik	49.95	2.5×5.3×1.6	Hand	90K	No	0.4	0.4	Left side rear	No
Switch-type										
Atari	Joystick	13.95	3.5×3.8×1.5	Both	—	—	0.6	0.6	Left top	No
Championship Electronics	Mini-Champ	11.95	n/a	Hand	—	—	1.3	0.4	Top and both sides rear	Yes
Championship Electronics	Super Champ	19.95	4.5×4.5×7.0	Both	—	—	1.5	0.5	Top and trigger	Yes
Coin Controls	Competition-Pro	19.95	3.5×4.5×5.5	Both	—	—	1.3	1.0	Both sides rear	No
Datasoft	Le Stick	39.95	1.5 dia.×5.0	Hand	—	—	1.3	0.8	Top	No
Discwasher	Point Master	n/a	4.0×4.0×5.5	Both	—	—	1.0	0.5	Top	Yes
D-Zyne Video	Supr Stick	39.95	5.8×3.0×2.0	Table	—	—	n/a	0.4	Top	Yes
Electra Concepts	Triga Command	n/a	4.0×4.0×7.0	Both	—	—	2.0	0.5	Trigger	No
Gim Electronics	Fire Command 2001	49.95	11×6.0×5.0	Table	—	—	1.3	0.9	Both sides top	No
HES	JoyMouse	19.95	3.0×3.5×3.0	Table	—	—	n/a	1.3	Front	No
Konami	JE 501	17.00	n/a	Table	—	—	0.9	0.5	Top	No
Milton Bradley	Cosmic Commander	40.00	n/a	Table	—	—	n/a	0.5	Top	No
Newport	Prostick Series B	34.95	3.3×4.4×2.0	Table	—	—	1.0	0.5	Left top	Yes
Newport Controls	Prostick II	24.95	n/a	Hand	—	—	1.0	0.6	(2) on front	No
Newport Controls	Prostick III	29.95	n/a	Hand	—	—	1.0	1.5	Front	No
Questar	Joystick	n/a	12.5×8.0×3.0	Table	—	—	1.3	0.8	Both sides rear	No
Roklan	Un-Roller Controller	49.95	n/a	Table	—	—	n/a	0.9	Left top	Yes
SpectraVideo	Quick-Shot III	19.00	n/a	Table	—	—	n/a	0.8	Top and trigger	No
	Quick Shot	13.95	4.0×3.5×1.3	Both	—	—	1.7	0.6	(2) Top and left top	No
Suncom	Slik Stick	9.95	3.5×3.5×1.5	Hand	—	—	0.75	0.5	Left top	No
Suncom	StarFighter	16.95	3.5×3.5×1.5	Hand	—	—	0.9	0.5	Left top	No
Wico	Red Ball	n/a	4.5×4.5×6.5	Both	—	—	1.0	0.4	Top and left rear	No
Wico	The Boss	19.95	4.0×4.0×6.8	Hand	—	—	1.3	0.5	Top	No
Zircon	Video Command	14.95	1.4×2.0×5.0	Hand	—	—	1.8	1.8	Top	No
Zircon	Z-Stick	19.95	1.4×2.0×5.0	Hand	—	—	1.8	0.25	Front	Yes

The Prostick II.



The Prostick III.

control. When the right side is pressed, it functions as the second fire button. It is difficult to press one and then quickly change to the other, and if you don't press exactly one side or the other, both functions are activated simultaneously. Included in the package is a "y" adapter cord which allows you to use the CoelcoVision keypad in conjunction with the Prostick III.

Many of our reviewers loved the solid grasp they could get on both of these Newport joysticks, yet some found that their hands were too small. The butt of your palm rests comfortably on one side of the unit as your fingers activate the buttons. The other hand is used to manipulate the stick which is topped with a smooth 7/8" plastic ball. Most of us were in agreement that $24.95 is not too high a price to ask for such a nice controller if you are not satisfied with your present one.

Spectravideo Quick-Shot III (ColecoVision)

Almost overshadowed by the new SV-328 computer in the Spectavideo booth at CES, the Quick-Shot III was presented for the first time. Since we were only allowed to look at the unit as it remained out of reach beneath a plastic bubble, the following should not be considered a review, merely an observation.

Few of the new ColecoVision replacement joysticks introduced at the show actually mimicked the functions of the original. Many shortcomings were apparent. Most of the new joysticks have only one fire button, so if the ColecoVision game calls for both buttons, you are out of luck. The Quick-Shot III seems to be the only controller that promises to do exactly what the ColecoVision joystick does, only much better.

The Quick-Shot III is a tabletop controller that adheres to any smooth surface by means of four suction cups on the base of the unit. It provides standard eight-direction movement and has four buttons. Two of the buttons are positioned on either side of the keypad. The other two are on the stick itself; one on the top of the stick and the other on the trigger of the molded handle.

Unlike most replacement joysticks for the ColecoVision, the Quick-Shot III has its own keypad to select gameplay levels. The 12 pressure-sensitive switches are covered by a thin piece of plastic. This is a membrane keypad that offers no tactile feedback.

As I have pointed out, the Quick-Shot III on display was a prototype that was kept under glass. We have yet to see a finished unit so we can not make any comments on how well it plays. If the finished product lives up to the claims of the manufacturer, I will certainly rush out to buy one. At $19, it's a steal.

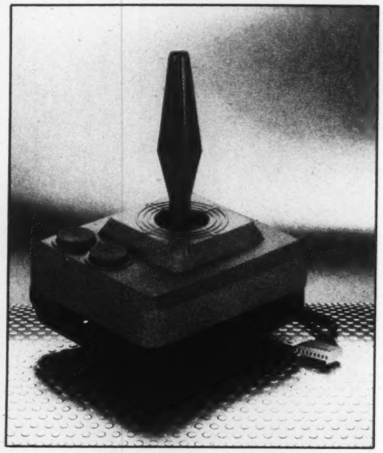
Wico Analog Joystick (5200)

One of the main things I don't like about the Atari Super System is the lack of a decent controller. Finally, after months of waiting, 5200 owners can buy an analog joystick from Wico.

The faults of the 5200 controller are many, and the Wico joystick seems to remedy most of them. This unit does not have its own keypad built in, but at additional cost you can buy a high-quality replacement keypad if you wish. The Analog joystick can be used as either a tabletop controller or a hand-held unit. It is equally well suited for either mode of play.

This 5200 joystick measures 6" high, 4" wide, and 4" deep. The plastic red handle tapers to a point at the top; the reverse of a bat handle. The Analog joystick uses potentiometers, and precise trim controls are easily accessible on the right side and back of the unit.

Most people complain that the controllers that come with the 5200 are not self-centering. While some games benefit from this, many other do not. The Wico Analog joystick solves this problem by allowing you to engage or



The Analog Joystick.

APPLE PADDLE CONTROLS

Manufacturer	Model/Name	Price	Size W x D x H	Table Top/ Hand Held	Potentiometer Resistance	Trim	Knob Size (in dia.)	Button Size (in dia.)	Button Placement	Tactile Feedback
A2D	2002	$34.95	3.0x3.5x2.0	Both	n/a	No	0.9	0.6 sq	Rear side	Yes
Apple Computer	Paddles (original)	39.95	2.5x3.2x0.8	Hand	150K	No	1.3	0.2	Left top rear	No
	Hand Controller	29.95	2.0x4.5x1.0(1)	Both	150K	No	1.0/2.0	1.0x0.6	Right side rear	Yes
Computer Works	Pro Paddles	49.95	1.5x2.5x1.3	Both	150K	No	1.0	0.4 sq	Rear side	Yes
Kraft	Paddles	49.95	4.0x4.0x2.3	Table	150K	Yes	1.2	0.4 sq	Left rear	Yes
Tech Designs	Adam and Eve	39.95	2.0x3.5x1.0(1)	Both	150K	Yes	0.9	0.4 sq	Left side rear	Yes
TG Products	Super Paddles	39.95	2.0x4.0x1.0	Both	135K	No	1.4	0.6	Left side rear	No
Zircon	Alpha Command	19.95	2.0x4.3x1.0(1)	Hand	150K	No	1.0/1.7	0.4	Right side	No

(1) Shape is not rectangular

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Controller Update, continued...

disengage the self-centering without having to disassemble the housing. On the underside of the controller are two sliding switches that disable the return-to-center springs on each axis.

There are two buttons in the upper lefthand corner of the base. The 3/4" concave button acts as fire button number one of the 5200, and the smaller, 3/8" button is the second control button. Neither offers tactile feedback.

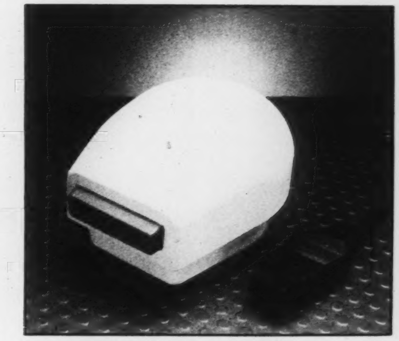
The Analog joystick we saw at CES was a bit wobbly, but this can probably be attributed to the fact that the unit was a prototype and took a great deal of abuse at the show. The Wico Analog joystick is a vast improvement over the current 5200 controller. Selling at $34.95 each, other versions of the Analog joystick also work on the IBM PC, the Apple II/II+, and TRS-80 Color Computer.

HES JoyMouse Controller (Atari)

Just as the Un-Roller controller looks deceptively like a track ball, the Hes JoyMouse resembles a mouse for a computer. In very simple terms, a mouse controller is like an up-side-down track ball. The JoyMouse, though, acts like an Un-Roller controller. This gets more confusing every minute.

The JoyMouse is a tabletop unit that you control with one hand. The palm of your hand fits on top of the unit with your fingers extending over the fire bar in the front. There were two different models of the JoyMouse on display at the show. With the first version you simply tilt your palm in the direction that you want to go, with the other model you push, or slide, the top portion of the JoyMouse in the desired direction. The fire button has different placement on both units.

"The final version of the JoyMouse will most likely be a compromise between the two models," explained a HES representative. Most people to whom I spoke liked the sliding model and the fire bar located on the front. Expect to see finished products on store shelves during September of this year. The JoyMouse will retail for $19.95.



The JoyMouse.

Wico Track Ball And Controller Card (Apple)

This new version of the popular Wico computer Track Ball differs from its predecessors in that no software modifications must be made to use it with your Apple.

For an up-close and personal look at the Wico Track Ball, check out page 119 in the Fall issue of *Video & Arcade Games.* Not many modifications have been made to the hardware of the unit; the main one is the addition of a required controller card. With this car installed, the Wico Track Ball is almost completely compatible with all existing software. Warning: the Track Ball does not work with the Apple IIe. Not yet, anyway. Wico is working on it.

We were told that there will be some kind of return policy initiated so that owners of the older, outdated model don't get the short end of the stick. The complete package, including the Track Ball, cable and controller, costs $89.95. Wico has also promised a comparable unit for the IBM-PC. ☐

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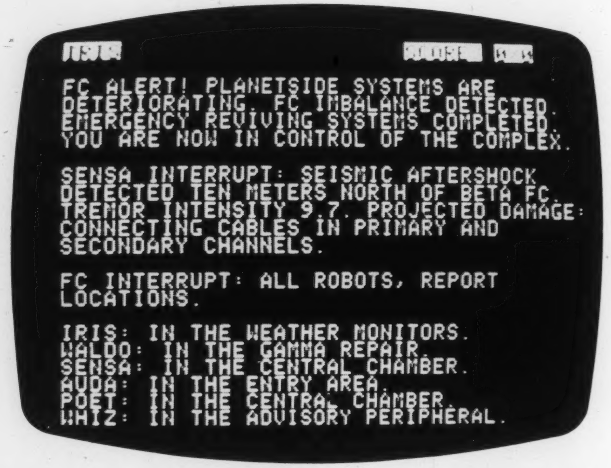
Apple Adventure and Arcade Action

Stephen Arrants



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LOCATIONS.

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WALDO: IN THE GAMMA REPAIR.
SENSA: IN THE CENTRAL CHAMBER.
AUDA: IN THE ENTRY AREA.
POET: IN THE CENTRAL CHAMBER.
WHIZ: IN THE ADVISORY PERIPHERAL.
```

Suspended

Suspended

From Infocom, creators of *Zork I, II* and *III*, *Deadline*, and *Starcross*, comes one of the most exciting games I have seen for the Apple. *Suspended*, written by science fiction author Michael Berlyn, is set far in the future on a planet run by computers. Apparently, the rulers of this planet don't trust their machines, because a lottery has selected you to be the guardian of the entire system.

Something has gone wrong, however. Systems are crashing and thousands are dying. You are awakened from cryogenic suspension to direct the repairs. Six robots are at your command. Each has different attributes: Sensa can detect energy waves and fields, but she isn't good at manipulating the environment. Auda can hear, but she's blind. Iris, confined to the control center, can see. Waldo has different appendages to pick up and move objects, but he is a bit thick. Whiz can interface with the information banks of the main computer. The last robot is Poet, a speaker in rhymes and riddles. Unfortunately for you, he seems to have a problem with his ROM—you can't always understand what he says.

The robots can be directed singly or in groups. You must learn how to direct them efficiently to achieve the smallest number of casualties. Parts must be replaced and machinery repaired—quickly. If the system isn't set right after a given number of turns, humans from the surface storm the cryogenic chamber and disconnect you.

All this would be easy, were it not for the fact that the previous guardian was unbalanced. He destroyed equipment, disabled a seventh robot, and left defective parts in the complex.

Because this is a text adventure, Infocom includes a map of the complex with plastic stick-ons representing the different robots. Without this map, play would be very difficult.

Suspended has four levels of play—normal, advanced, configure, and impossible. The advanced level begins with one of the six robots disabled and at a later stage of the game.

The configure level allows you to set up the game the way you want. You can decide where the robots will begin, how long it will be until a system fails, how long until the humans come for vengeance, and other factors. Winning at the impossible level guarantees a free trip to the planet at Infocom's expense.

A hallmark of Infocom games is the extensive vocabulary used. It is almost as if you are conversing with a human rather than a computer.

The first time I played *Suspended* it took me about an hour to get used to its format. By 3:00 a.m., I was hooked.

Suspended is intelligent, satisfying, addictive, and a break from the usual computer games. Infocom has set a new standard for text adventures that will be tough to beat.

creative computing
SOFTWARE PROFILE

Name: Suspended

Type: Text-adventure

System: Apple II, II+, Atari, Commodore 64, IBM-PC

Format: Disk

Language: Machine

Summary: Superb adventure. The best yet.

Price: $49.95

Manufacturer:
Infocom, Inc.
55 Wheeler St.
Cambridge, MA 02138

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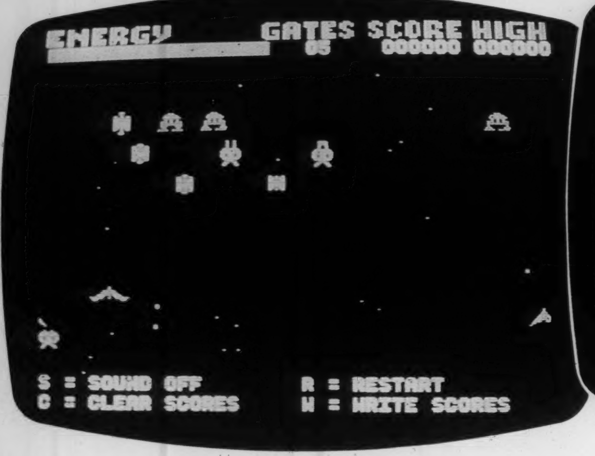
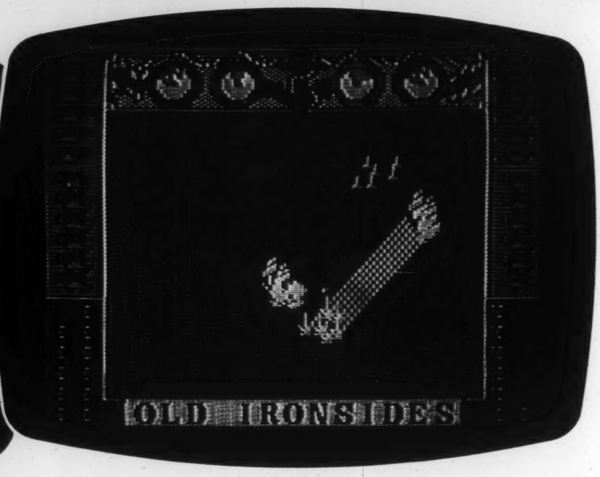


Pentapus



Old Ironsides

Pentapus

Created in the classic style of arcade games, *Pentapus* is a unique fusion of arcade effects and illusions which places it far beyond most of the games available for the Apple.

You are on a mission of vital importance. The galaxy has been rendered uninhabitable by Armageddon-like battles. After searching other galaxies, man has learned that only the Milky Way galaxy can sustain human life. Unfortunately, mutants have taken over, led by the evil and powerful Pentapus. To regain human domination, you must control the five remaining stargates. Pentapus is a tough adversary, however. Wave after wave of mutants defend their newly won territory.

There are four levels of play, K, 1, 2, and 3. The K level is for youngsters. Movement is extremely slow at this level; perhaps too slow for experienced kids. Play becomes faster and more furious at higher levels. Moving the joystick causes the stargate (the bomb sight) to move across the screen. The stargate can be scrolled off screen right or left and made to reappear on the other side. One button fires bombs, while the other temporarily shrinks the stargate, making it a smaller target.

Four waves of aliens attack you: the Drangels, C-Aliens, Eagulls, and the loathsome Nagas. The Nagas have a tendency to turn into Drangels at the worst possible moment. Destroy these attackers and you are up against Pentapus. Beating this creature is not as difficult as you might think. Eliminate his fleet of Whirrs, and Pentapus is defenseless. Hit him squarely between the eyes and he's a dead alien. The universe is reclaimed by defeating Pentapus three times.

Pentapus includes a pause feature, useful if you want to make a trip to the fridge or answer the telephone. High scores can be saved and written to the disk.

Great sound and graphics combined with interesting twists to the arcade format make *Pentapus* an exciting game—one that will be played over and over.

creative computing
SOFTWARE PROFILE

Name: Pentapus
Type: Arcade
System: Apple II, II+, IIe, IBM
Format: Disk
Language: Machine
Summary: Cute, fun game. Kids will love this.
Price: $29.95
Manufacturer:
Turning Point Software
11A Main St.
Watertown, MA 02172

creative computing
SOFTWARE PROFILE

Name: Old Ironsides
Type: Hi-res adventure
System: Apple II, IIe, III
Format: Disk
Language: Machine
Summary: An interesting entry. Moves must be well-planned.
Price: $39.95
Manufacturer:
Xerox Education Publications
245 Long Hill Rd.
Middletown, CT 06457
(203) 347-7251

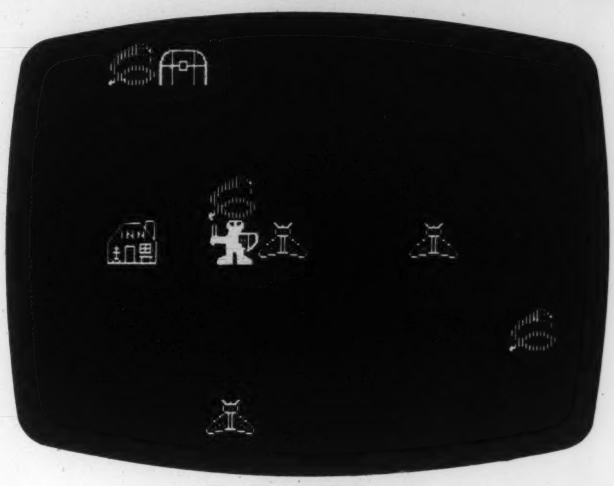
Old Ironsides

This game is an interesting twist on sea-based games. Usually, they involve submarines, bombers, helicopters, and other pieces of modern technology. Coming from, of all places, Xerox, *Old Ironsides* is a one- or two-person battle game featuring old, three-masted ships fighting it out with cannons. The graphics are superb, adding to the enjoyment of the game.

The ships battle on the high seas, fighting not only each other, but winds and currents. Figuring out how to use the wind to your advantage is a factor in winning this game. Like their real-life counterparts, the ships are slow to respond and maneuver. When in range, they can fire up to six cannons at each other. A direct hit can destroy masts, thus reducing the ability to maneuver. A brave commander can ram his enemy and fire his cannons to cause maximum damage. If you hit the enemy's powder magazines, however, both ships are destroyed.

As on any sea, fog is a danger. Strangely, it is only present off-screen. A compass helps you get back on-screen. If you stay in the fog too long, you are lost, and doomed to float forever. This is the hardest part of the game. Fog on-screen would be an improvement. The documentation is comprehensive, in the form of a parchment booklet. It includes a log book for recording your own famous naval encounters.

A mixture of arcade and strategy



The Caverns Of Freitag

game features, *Old Ironsides* could be used in schools as a supplement to a history course.

The Caverns Of Freitag

Waiting inside a cave on the Enchanted Isles is Freitag, a particularly loathsome dragon. It seems that all Freitag does is wait for some poor fool to stumble into the cave and become the next entree.

creative computing
SOFTWARE PROFILE

Name: Caverns of Freitag
Type: Adventure
System: Apple II, II+, IIe
Format: Disk
Language: Applesoft Basic w/machine language core
Summary: A tough time-consuming adventure.
Price: $29.95
Manufacturer:
Muse Software
347 N. Charles St.
Baltimore, MD 21201
(301) 659-7212

Getting to the cave is no easy trek. You must battle creatures, both real and imaginary along the way. True to the sword-and-sorcery fantasy role-playing genre, you start off as a poor but worthy serf and attempt to rid the land of an evil scourge.

A sword and bow are your only weapons, along with a spell, the Charm of Sir Robin. Sir Robin, it seems, had a fondness for birds. Invoking the spell turns you into a bird, allowing you to run twice as fast as a pursuing monster. Unfortunately, using the spell tires you out, so you must stop and rest.

The monsters are almost limitless. There are moths, serpents, bats, invisoids, evil wizards, and mimics. At some points of the game, a large group of monsters queues up, a new one replacing the monster you have just hacked to death. Since this game does not have a pause feature, you must keep fighting without a rest.

Moves are forced in this game. Although you can set the time used in each move, be quick—the monsters won't wait for a decision. Move or die. Even though I don't really like "quest" games, *The Caverns of Freitag* is good fun. The fact that play can't be stopped adds to the enjoyment. Just when you think you have won the game, there is another sur-

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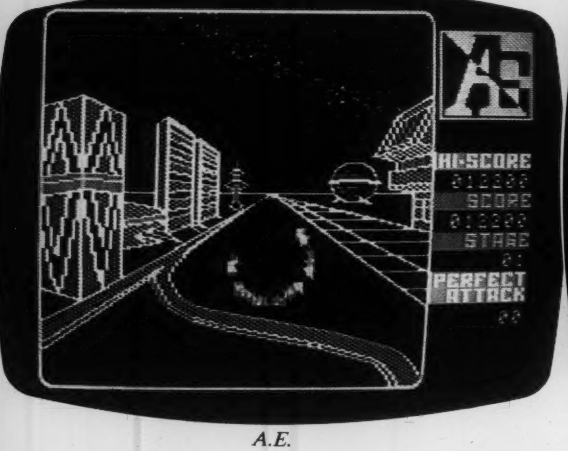
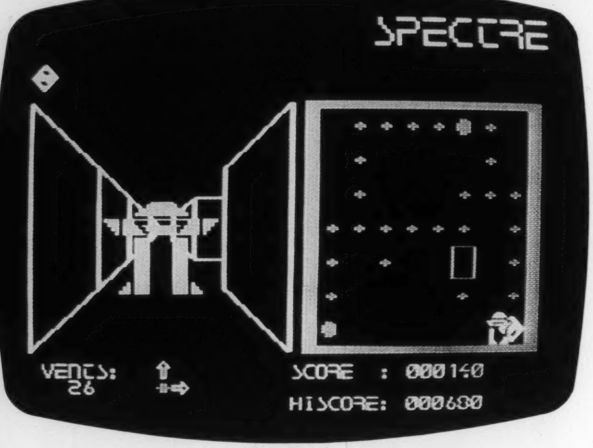


A.E.



Spectre

prise waiting. I won't reveal it here, except to say that killing Freitag is the *least* of your worries. Remember—he has many friends! Good graphics, a quick pace, and some twists on an old theme make *The Caverns of Freitag* a good successor to Muse's *Castle Wolfenstein.*

A.E.

We buy from the Japanese autos, stereos, televisions, VCRs, printers, and now *A.E.*, an arcade game for the Apple.

Jun Wada and Makoto Horai, two programmers from Japan, have come up with one of the best games of the year. A large, multinational corporation has created pollution control robots which suck up all the foul gases in our air. Unfortunately, a few bad models slipped through quality control. These creatures strafe and attack almost anything. Your mission is to destroy all of the mechanical misfits.

Looking like stingrays, the A.E. attack in a formation of six. One of the greatest effects of this game is the 3-D screens. Watching a flock of A.E. swoop across the sky, behind and in front of scenery takes your breath away. Each of the eight playing screens takes place on a planet farther from Earth as you drive the evil ones closer to the edge of our solar system. Each screen is progressively faster and more difficult to complete.

The A.E. are sneaky. Sometimes they attack in a straight line formation of six, sometimes they split off into smaller groups. Winning a screen involves destroying three waves of A.E.

Play is by joystick, although firing and detonating the missiles will take some getting used to. Push the trigger to fire a missile, and keep the button pressed. When you think an A.E. is in range, let up on the button to detonate the missile. This allows for long range destruction. Detonating a missile at the beginning of an A.E. attack wave can result in destroying the whole wave with just one missile.

The graphics are superb. There is no jerkiness or jumping about. Everything moves smoothly.

A.E. is addictive. It is also a game that requires excellent timing and dedication to the arcade spirit. Games clods and other less zealous players will probably find the action frustrating. A split-second can make the difference between destroying an A.E. or becoming its dinner.

creative computing
SOFTWARE PROFILE

Name: A.E.

Type: Arcade

System: 48K Apple II, II+, IIe, Atari, Vic-20

Format: Disk

Language: Machine

Summary: Japan's exciting new import.

Price: $34.95

Manufacturer:
Broderbund Software
1938 Fourth St.
San Rafael, CA 94901
(415) 456-6424

Spectre

Take the mobile police of Tron, add a dash of Pac-Man, mix in some 3-D views a la *Wayout*, and you have *Spectre.*

Though not the most exciting game to come from DataMost, *Spectre* offers some good excitement.

You are on a disabled space station, marooned in the outer reaches of the solar system. Help is on the way, but aliens have invaded the station, and it is up to you to force them out. As you travel down the corridors of the station, dodging the alien Questers, you are reminded a bit of Pac-Man being chased by his enemies. Step into an energy beam and turn the tables on the aliens. It then becomes their turn to run away!

One interesting twist is that about five seconds into the first level of the game, the walls of the maze disappear. Transport chambers are available, letting you jump to the place at which you started. You are out of danger for a short period, but don't slack off—the Questers are quick and deadly!

This is not the most exciting game on the market, but it is seductive. It looks so easy, so simple, that you are tempted to play it "just one more time" and beat your best score. Isn't that one reason we play these games?

creative computing
SOFTWARE PROFILE

Name: Spectre

Type: Arcade

System: Apple II, II+, IIe

Format: Disk

Language: Machine

Summary: Interesting combination of game elements.

Price: $29.95

Manufacturer:
Datamost
8943 Fullbright Ave.
Chatsworth, CA 91311
(213) 709-1202

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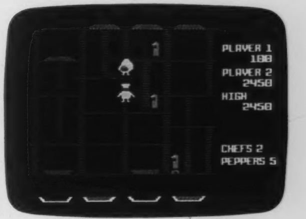
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PLAYER 2
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CHEFS 2
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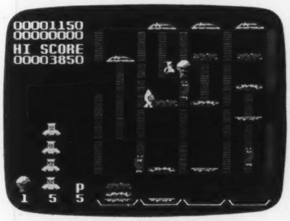
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IBM® Personal Computer

BurgerTime T.M.

M NETWORK™ by MATTEL ELECTRONICS®

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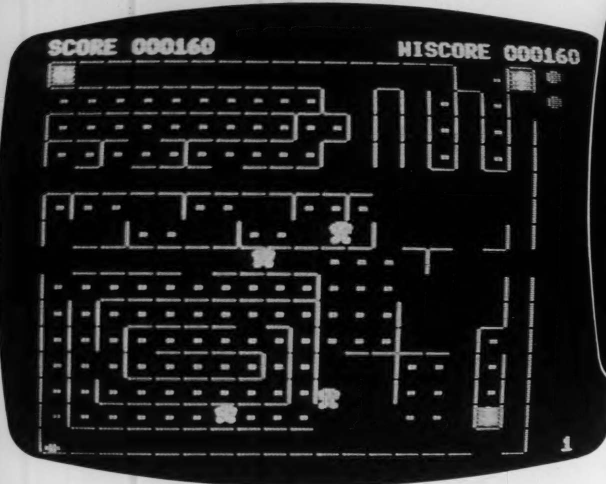
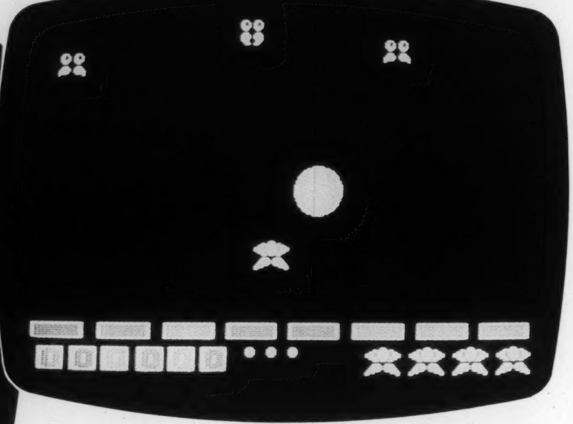
CIRCLE 189 ON READER SERVICE CARD



Maze Craze Construction Set.



Lancaster

Maze Craze

Tired of playing Pac-Man for the millionth time? Have you gone through the mazes so many times that you could run them in your sleep while tied to an arcade console?

Get ready for some new maze action. Data Trek's *Maze Craze Construction Set* will please the most hardcore Pac-fanatic as well as the occasional player.

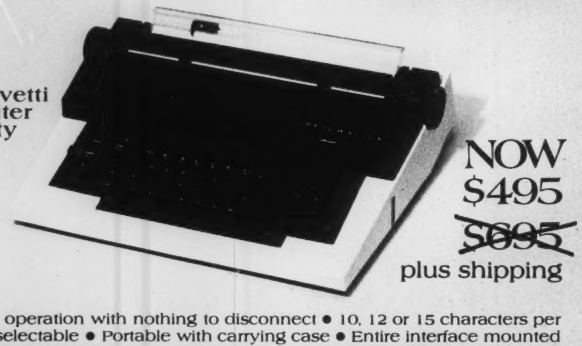
Instead of giving you a set number of mazes and patterns which can be memorized after repeated play, the *Maze Craze Construction Set* lets you construct your own mazes. That in itself would be enough for me to recommend this game. But Data Trek goes a bit further. You can also create and modify game players, monsters, and all their attributes. Choose the speed of a player, its intelligence and sensitivity, and do the same for monsters. The possibilities are limitless. You have so many choices that you will be hard pressed to repeat a single, complete game.

On booting the disk, you are presented with a menu detailing the various options available. I suggest configuring the disk for either keyboard or joysticks and then playing some of the sample games included. When you tire of those, create some of your own.

Ten mazes are provided. Pick one and enter the Edit mode. By using the joysticks you can designate the starting point for a player, where to locate tunnels for quick escape, and where you want the bonus dots. In each maze there can be a total of four energizers, placed wherever you want. After editing a

creative computing
SOFTWARE PROFILE

Name: Maze Craze Construction Set
Type: Arcade
System: Apple II, II+, IIe, Atari, Commodore64
Format: Disk
Language: Machine
Summary: Perfect for the maze fanatic. Tough!
Price: $39.95
Manufacturer:
data trek
121 West E. St.
Encinitas, CA 92024
(619) 436-5055



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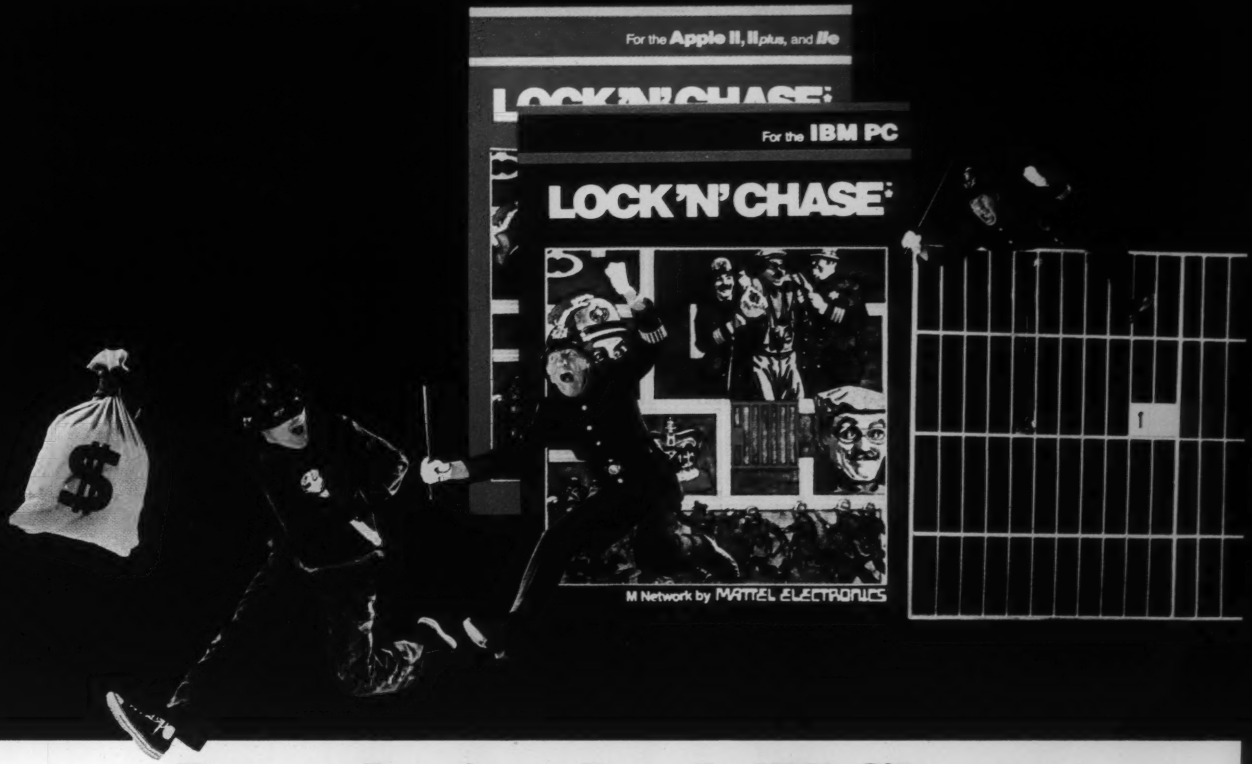
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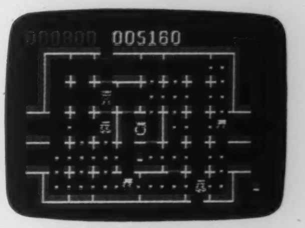
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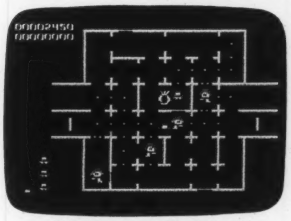
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CIRCLE 258 ON READER SERVICE CARD

maze, lay out the dots to complete the maze.

Creating characters is a bit more difficult. Be sure to study the examples in the sample programs.

The next step is the Game Editor. This feature allows you to string together several mazes and characters to form a complete game. Your game does not have to be entirely your own creation; you may pick some of the samples to use along with your own. Finally, the Game Intelligence level allows you to change the monster and bonus intelligence, control collision detection, and set the skill level of the game.

After creating your own games, save them on a formatted disk for later play or editing.

How do these games play? And how do they compare with other maze games? On the whole, play is very good. The player figure is quick to respond, and the animation is smooth and clean. There is none of the jerkiness or jumping associated with some other maze games.

This set of games is different. I like defining the situation and rules of play. We have had this game at *Creative* for a little less than a month, and I have already filled up one disk with games of my own design.

If you know a dedicated maze player, this is the perfect gift. And if that player has beaten you time and time again, *Maze Craze Construction Set* by Eric Hammond is the perfect revenge.

Lancaster

Strange, bubble blowing bugs threaten Earth with destruction. Only you and your Apple stand between them and total annihilation.

To attack, shoot the bubbles to release the larvae within. These critters are immune to your weapon, but within seconds they turn into vulnerable yet deadly insects. The bubbles don't explode on the first few shots, they are just knocked upward.

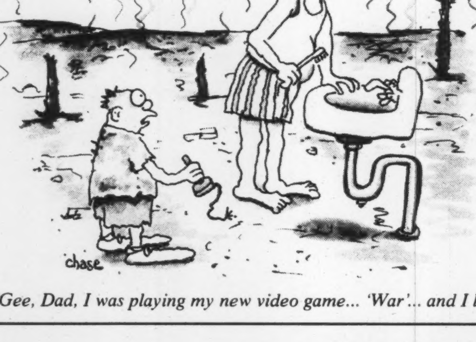
Points are earned by destroying the insects and by using your pincers to bounce the bubbles on corresponding colored bars at the bottom of the screen. This isn't as easy as it sounds. The bubbles are slippery and seem to fight your attempts to clamp onto them. There is also the possibility that the bubble will explode and release larvae.

creative computing
SOFTWARE PROFILE

Name: Lancaster
Type: Arcade
System: Apple II, II+
Format: Disk
Language: Machine
Summary: A fun chase and gobble game.
Price: $29.95
Manufacturer:
Silicon Valley Systems
1625 El Camino Real
Belmont, CA 94002
(415) 593-4341.

There are six levels of play, each more difficult than the last. If the attack gets too intense, drop one of your three Smartbombs. Smartbombs destroy everything except larvae and your ship. Play is either joystick or keyboard controlled, and both can be used interchangeably. High scores can be saved to disk, and a pause feature is included.

This is not the most exciting game to come along, but the graphics, audio, and execution are first rate. *Lancaster* looks and plays like a real arcade game, providing much of the excitement of a coin-op. ☐



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For the IBM PC
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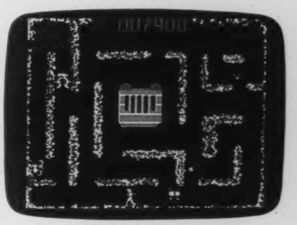

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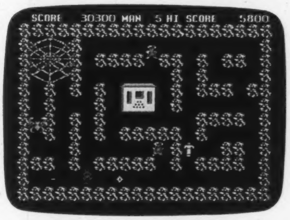
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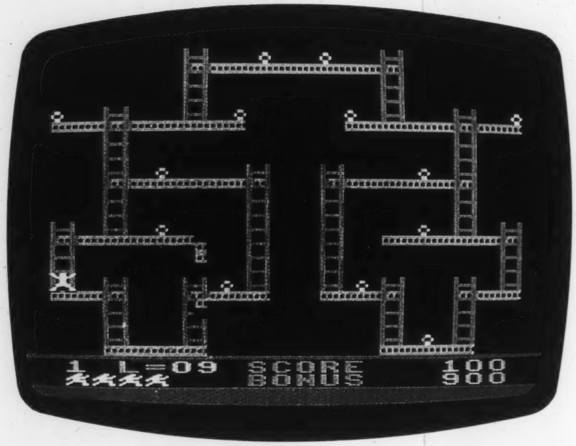
A Gaggle of Games for Atari

John Anderson, Arthur Leyenberger, Owen Linzmayer and Betsy Staples

Jumpman



Jumpman.

Well, I'm hooked again. Once every six months or so I discover a game that I just can't get enough of. *Galaxy Invasion* for the TRS-80 was the first, followed by *Tsunami* for the Apple, the arcade Snap Jack, and handheld Turtles from Entex. When I find a game I really like, I stick with it, playing for hours at a time, and while I have never missed a meal because of a game, I have burned a few.

My latest addiction is *Jumpman* from Epyx. Vaguely reminiscent of Donkey Kong, *Jumpman* features a small white figure whose mission is to disarm bombs placed in locations of varying accessibility on the playscreen. To disarm the bombs, he must only touch them. To get them, he must often climb ladders and leap gaps in the girders on which he climbs.

You control your jumpman with the joystick, moving the stick in the direction in which you want him to go and pressing the fire button when you want him to jump. The jumping is the hard part; it is all too easy to send your man hurtling off into space and on to his death below.

Each of the 30 screens is different. Each has a different arrangement of girders, ropes, ladders, and bombs, and each has a different hazard that you must avoid. Hazards include "intelligent" bullets that go out of their way to find you, vampire bats, hailstones, "jumping blocks," and undoubtedly a host of others that I have yet to encounter. You will lose many jumpmen experimenting and learning your way around each screen, but even when you have mastered a given screen, you must remain alert for the unpredictable hazards.

The Beginner level cycles you through screens 1 through 8, Intermediate through screens 9 through 18, and Advanced through 19 through 30. Other selections include Randomizer, which offers a random selection of playscreens, and The Grand Loop, which allows you to work through all 30 screens in order.

You earn points for each bomb that you disarm, and you can accumulate bonus points by moving swiftly and smoothly to complete a screen before the bonus timer runs out. The top ten scores and bonus scores are saved on disk, but you can clear the scoreboard and start over at any time.

Jumpman has everything I like in a game. It is very playable right from the beginning, so first time players don't become discouraged. It allows you to improve as you practice and learn. It has clever little tricks to challenge your ingenuity. It offers just the right amount of randomness in the form of the hazards to keep you from getting bored. And it bolsters your ego by recording your high scores. *Jumpman* has earned my highest recommendation.—*EBS*

creative computing

SOFTWARE PROFILE

Name: Jumpman

Type: Arcade game

System: 32K Atari, 48K Apple,
Commodore 64

Author: Randy Glover

Format: Disk and cassette

Language: Machine

Summary: Challenging fun for all ages.

Price: $39.95

Manufacturer:
Epyx/Automated Simulations
1043 Kiel Ct.
Sunnyvale, CA 94086

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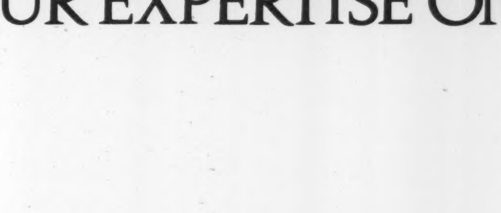

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Qix

Qix has been one of my all time favorite arcade games, and I eagerly awaited the home computer version of this classic. The game consists of drawing boxes of color on the screen, the objective being to cover as much of the screen as possible.

The boxes of color are created by making lines (Stix) with a cursor (the Marker) at either fast or slow speed. The major danger is a spinning helix (called the Qix) which constantly moves around the screen. If at any time it touches your Stix before you complete a box, your Marker is eliminated.

Another danger is called Sparx. While you are drawing Stix, two little Sparx run around the Stix patterns and if they run across your Marker, you lose one Marker. Two more Sparx appear to antagonize you at predetermined intervals. The duration of this interval may vary from 10 to 90 seconds; the default duration is 40 seconds.

If at any time you stop drawing without completing a box, the Fuse ignites where you began and follows your Stix to destroy you. Only by moving again can you escape the dreaded Fuse. Finally, if you attempt to cross your own line with your Marker, the Fuse starts after you until you move sideways and turn back. If you are unfortunate enough to create a spiral, there is no hope. The Fuse starts again and ultimately destroys your Marker.

creative computing
SOFTWARE PROFILE

Name: Qix
Type: Arcade game
System: 16K Atari 400, 600, 800, 1400XLD, 1200XL, 1450XLD
Format: Cartridge
Language: Machine language
Summary: Good translation of the arcade favorite.
Price: $44.95
Manufacturer:
Atari, Inc.
1265 Borregas Ave.
Sunnyvale, CA 94086

The direction of your Marker is controlled with the joystick movement and the controller button controls the speed. A box drawn in the slow mode is colored red, and a box drawn in fast mode is blue. Slow draw gives you more points, but your Stix is vulnerable to the Qix for a longer period. As the game progresses, a second Qix appears, and the action heats up.

Compared to the arcade version, the game seems a little slow when a box is being colored in and when you are waiting for a new Marker to appear. This is no cause for alarm—it is *still* a challenging game.

Qix is really a one-player game. In the two player mode, the first player uses all three of his Markers, then the second player does the same. That means that the first player completes the entire game before the second player gets a chance to play. The result is that two players of uneven ability will probably never play together since neither will want to sit on the sidelines until the other finishes.

In spite of this drawback, *Qix* is still a fun, challenging game that will be enjoyed by the whole family, albeit one at a time.—*AL*

Sneakers

If you are headache prone, *Sneakers* by Sirius Software will probably give you one. But it will be one of the most enjoyable (and hectic) headaches you will ever have. As the game begins, a herd of little critters with oversized shoes called Sneakers attempts to do a tap dance on your ship. You have five ships, and your mission is to blast the Sneakers (or other objects) into oblivion.

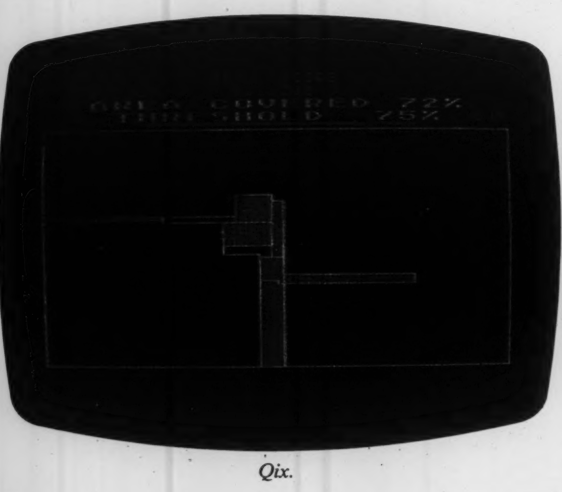
creative computing
SOFTWARE PROFILE

Name: Sneakers
Type: Arcade game
System: 48K Atari 400/800, 1200, 48K Apple
Format: Disk
Language: Machine language
Summary: A fast action shoot-'em-up game.
Price: $29.95
Manufacturer:
Sirius Software
10364 Rockingham Dr.
Sacramento, CA 95827

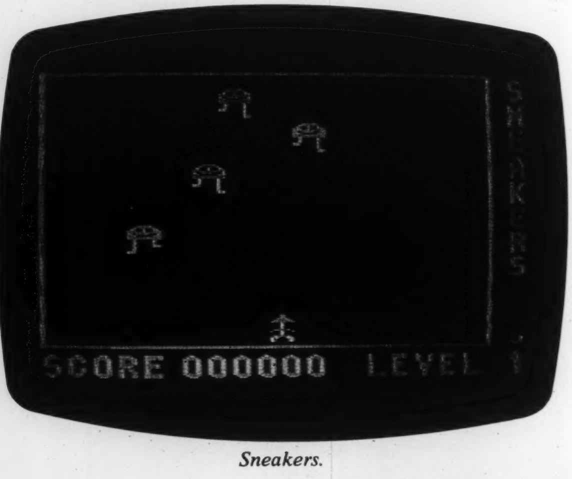
Each subsequent screen presents different objects for you to shoot at. There are saucers, meteors, daggers, and more. The movement of the objects is different for each screen. For example, Sneakers tap dance, meteors fall like rain, and daggers zig-zag before attacking. Once eight screens have been completed a new level is reached.

Points are awarded for each object shot down, and bonus points are scored when you complete a screen without losing a ship. Options include selecting a paddle or a joystick (a paddle gives you much better firing accuracy and control), choosing a difficulty level, pausing the game, and turning off the music.

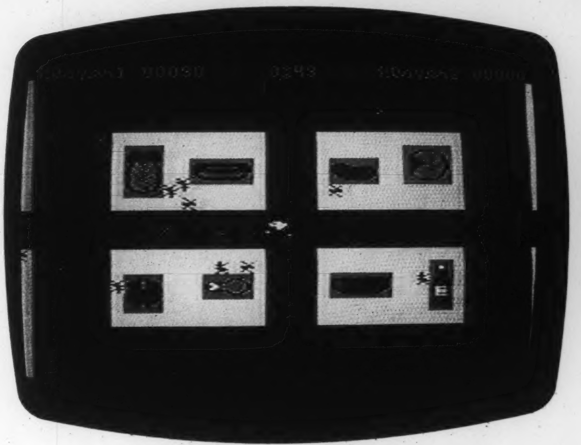
I'm a sucker for a fast action shoot-em-up game as long as I can start at an easy level and work my way up to the pro-



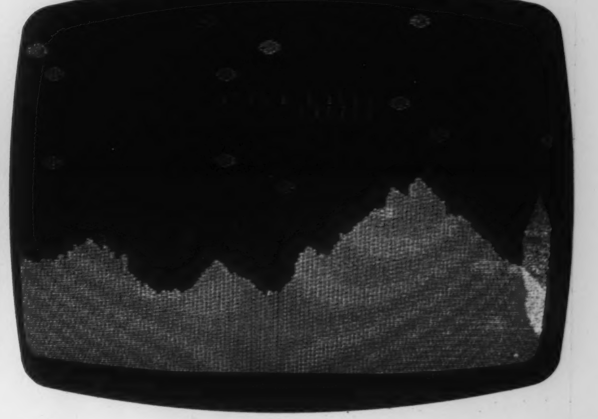
Qix.



Sneakers.



Picnic Paranoia.



Star Sentry.

fessional level. *Sneakers* is as good a game as any in this genre. In fact the action is so hectic, I can only play this game in small doses (like half an hour) before my hand begins to cramp. This is especially true at the higher difficulty levels.

If you are a fan of the "If it moves, shoot it" type of game, you will like *Sneakers.—AL*

Picnic Paranoia

The name *Picnic Paranoia* had a nice ring to it and the cover art looked interesting with an assortment of insects attempting to remove hot dogs, ketchup, and pickles from a picnic table. As it turned out, the cover was a good representation of what the game was all about.

The game is easy to understand, and you can begin playing immediately. The scenario is simple. George has gone on a picnic, and an assortment of pests are intent on sharing his food. Ants come from all sides, bees buzz around and try to sting him (which temporarily paralyzes him), and spiders not only bite but weave their webs, impeding his movement. If you don't swat the ants quickly they will carry off the food. The webs must be cleared to reach the ants and only then can an attempt be made to grab the food and return it to the table. It is rather tricky and takes a while to master.

creative computing
SOFTWARE PROFILE

Name: Picnic Paranoia

Type: Arcade game

System: 48K Atari 400/800, Apple II

Format: Disk

Language: Machine language

Summary: Challenging and a lot of fun to play.

Price: $34.95

Manufacturer:
Synapse Software
5327 Jacuzzi St.
Richmond, CA 94804

Points are earned for each insect swatted and for the amount of food remaining on the table after each 90-second round. Also, after the first 5000 points and each 10,000 points thereafter, a can of bug spray sweeps across the screen exterminating everything in its path—a nice touch. The picnic is over when all of the food is gone. There is a cute end of game screen when the insects have won, which they always do.

If you are the kind of person who does not like to get ants in your pants or who leaps 10 feet into the air at the sight of a spider, then *Picnic Paranoia* is for you. Why? Revenge. Here is your chance to swat all of the bugs that have ever gotten on your nerves in the comfort and privacy of your own home. The sound of swatting the bee is especially satisfying.

If you want an unusually challenging way to release your aggressions and hostilities, choose the night picnic option of the game. In the night picnic you can see only the insects in your immediate area. You can see the food disappearing from the table, however, so you always know where the pests are.—*AL*

Star Sentry

The creatures on the cover of this box gave me nightmares. The back of the box read: "The place: a remote outpost on an ice world light years from the earth. Suddenly the small planet Thule is surrounded by alien life orbs destined to change the atmosphere to suit themselves. This spells certain death for your base as the frozen mountains start to melt!" So far, *Star Sentry* sounds interesting.

The game begins with a group of aliens swarming out from beneath the planet. These alien orbs immediately surround the planet, and your goal is to destroy them. It takes three direct hits to obliterate an orb. With each shot of your photon cannon, the alien is reduced in size. The orbs travel at different speeds and move in different patterns, so it is not easy to hit them.

creative computing
SOFTWARE PROFILE

Name: Star Sentry

Type: Arcade game

System: 24K Atari 400/800

Format: Disk or tape

Language: Machine language

Summary: Another space shoot-'em-up.

Price: $39.95

Manufacturer:
A.N.A.L.O.G. Software
P.O. Box 23
Worcester, MA 01603
(617) 892-3488

You maneuver your space ship by scrolling horizontally. You may travel in either direction at any of four different speeds. The top half of the screen is supposed to be space and the bottom half is made up of atmosphere and mountains. Naturally, flying through the atmosphere is a little sluggish, what with friction and all.

There are at least 10 levels in this game. A level is differentiated by the number of aliens you have to shoot at (or run away from) and an assortment of other hazards. In levels 2 and up, a column of fire projects upward from the planet surface. For as long as the top of the fire column touches the atmosphere you lose 500 points. It is a good idea to destroy this as soon as possible because during each second that the fire is lit an alien orb is transformed into a saucer. Saucers are meaner than orbs but are easily confused.

Each time your ship is destroyed (you have three lives initially) the heat of the explosion melts some of the mountains. The game ends when the mountains have melted completely and the aliens have taken over the planet. In some ways, this is the best part of the game. When all is lost, cute alien creatures march single-file out of the hole in the planet surface and off into the sunset. This is accompanied by an appropriately melancholy tune.

Star Sentry is an interesting and challenging game. However, the simplistic graphics tend to detract from its staying power. An especially nice feature is that you can practice your maneuvering and firing skills in an attract mode without having to worry about being shot down.—*AL*

Odin

Odin, a version of Othello, is a fast-paced game in which the outcome frequently depends upon the last few pieces played. Unlike Chess or Go, a good game of *Odin* may be completed in about a half hour.

The game is played on an 8 x 8 grid (a checkerboard). Each player has collection of small discs that are white on one side and black on the other. When the pieces are played, the exposed color indicates ownership. The object of the game is to have the greatest number of pieces on the board. *Odin* conforms to the rules of the United States Othello Association.

Odin should be thought of as a computer*ized* version of Othello rather than a computer game. The computer implementation facilitates play by keeping track of, and displaying the score at all times and providing many options that enhance the enjoyment and understanding of the game.

Some of these options include: playing the computer at any of 14 levels of difficulty, using the computer screen to let two people play against each other, asking the computer for advice on your move at any time, setting up board positions and continuing play from there, and allowing the computer to play itself from predefined board positions to analyze different strategies.

Moves are made by placing the cursor on the desired square and pressing the paddle button (or RETURN key). The piece is then placed on the square and captured pieces are flipped. Only valid moves are allowed. *Odin's* move is indicated by a blinking cursor. After examining the intended move, you press the controller button to execute it. At any time you may force *Odin* to play his best move so far.

creative computing

SOFTWARE PROFILE

Name: Odin
Type: Game
Author: Peter Frey
System: 48K Atari 400/800, 1200, 48K Apple, 32K TRS-80
Format: Disk
Language: Machine language
Summary: An excellent translation of the board game Othello.
Price: $49.95
Manufacturer:
Odesta Software
930 Pitner
Evanston, IL 60202
(800) 323-5423

At the end of a game you may start a new game, take back up to the last eight moves, or view a replay of the entire game move-by-move. Another option is to list a complete record of moves on the screen using the standard notation.

Odin by Odesta Software is both well conceived and nicely implemented. It is a quality game that will satisfy Othello players at all levels. The package offers excellent documentation including strategy hints and a history of the game. You get access to a toll-free hotline and a subscription to Odesta's newsletter that discusses *Odin*, their other games, and how they may be used to study artificial intelligence.

Odin is an excellent example of state-of-the-art software.—*AL*

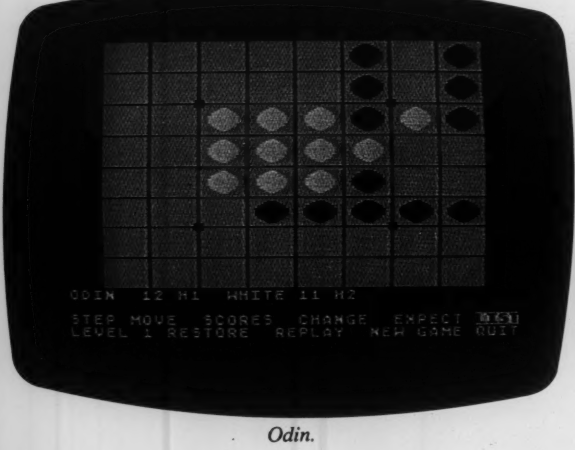
Attack At EP-CYG-4

What do you get when you cross *Missile Command* with *Protector II*? Give up? *Attack at EP-CYG-4*. I knew this game seemed familiar.

creative computing

SOFTWARE PROFILE

Name: Attack at EP-CYG-4
Type: Arcade game
System: 16K Atari 400/800, 1200
Format: Cartridge
Language: Machine language
Summary: A different variation on the usual space theme.
Price: $39.95
Manufacturer:
Romox, Inc.
476 Vandell Way
Campbell, CA 95008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STEP MOVE SCORES CHANGE EXPECT
LEVEL 1 RESTORE REPLAY NEW GAME QUIT

Odin.

Attack At EP-CYG-4.

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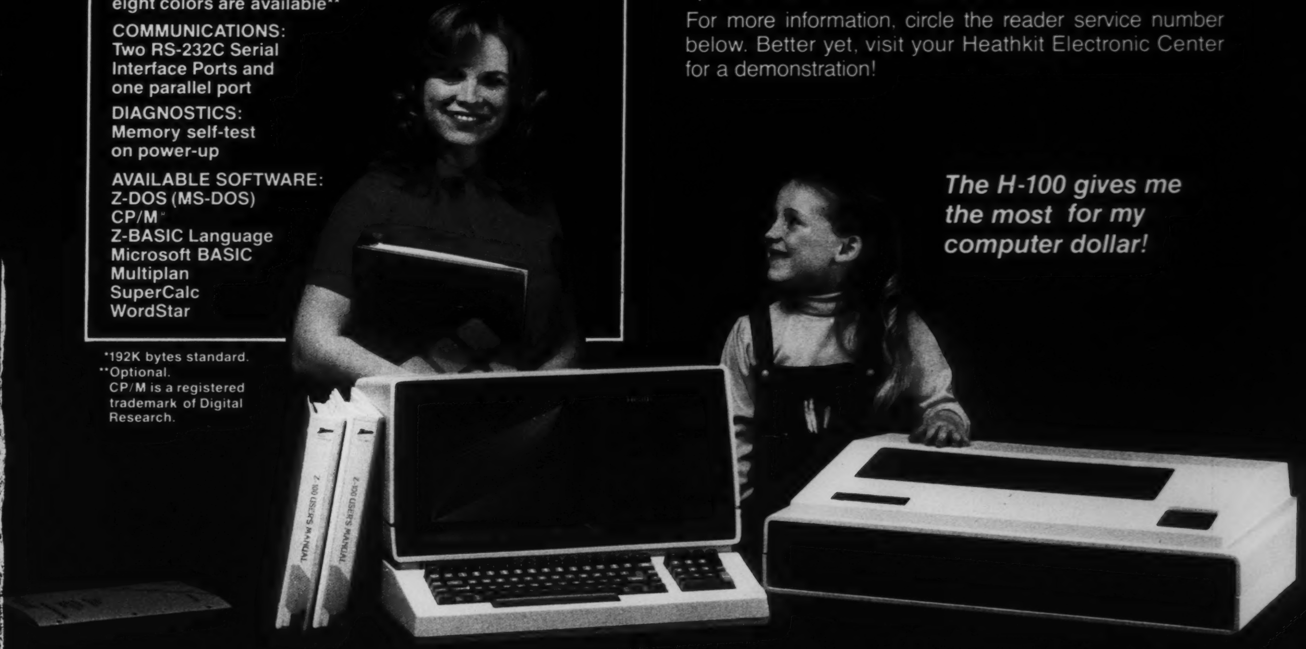

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CIRCLE 164 ON READER SERVICE CARD

This is a one- or two-player game that, frankly, had me confused at first. In the one-player version your joystick controls both the position of your ship and the targeting cursor. The former is controlled *without* the use of the fire button and the latter is controlled *with* the use of the fire button. The object of the game is to destroy the Tartillian cityscape without being destroyed yourself.

Targets are sometimes observable enemy gunposts; other times they are minute flashes of light. The directions accompanying the game are sparse so you can make up any scenario that fits your mood at the time. After destroying these enemy structures, you can continue to the next sector. In the higher numbered sectors you must fend off attacking enemy ships along with the ground fire that you attract.

I found the single-player game to be more than I could handle. It soon became an exercise in frustration. Perhaps a more skillful player or one who is accustomed to doing 17 things at once might fare better.

On the other hand, I enjoyed the two-player version very much. In the two-player game, the first joystick is the pilot's controller which maneuvers the attack ship and controls the shields. The second joystick is the gunner control which moves the targeting cursor of the attack ship and fires the "lyso-blast" weapon. Teamwork is definitely called for, and the coordination of effort is half the fun. When an alien ship (or two) appears out of nowhere, the fun really begins.—*AL*

Hazard Run

Hazard Run is so-named because it is roughly based on the television show "Dukes of Hazzard" (though I'm sure Artworx would deny it if approached by the show's producers). The object of the game is to guide your car through all manner of obstacles, including rivers, fences, and the police. If you have ever watched the show, you will recognize the car in the game.

creative computing
SOFTWARE PROFILE

Name: Hazard Run
Type: Arcade game
System: 16K Atari
Format: Disk/cassette
Language: Machine
Summary: Exciting scrolling car chase.
Price: $27.95 cassette, $31.95 disk
Manufacturer:
Artworx Software
150 N. Main St.
Fairport, NY 14450
(716) 425-2833

Using the joystick, you accelerate, decelerate, and steer. Easy on the brakes, though: they wear out awfully fast. By steering one side of the car up onto a fence or other obstacle, you can get up on two wheels, which may or may not help you elude the road blocks ahead.

The view in *Hazard Run* is from above, so you can see approaching trees, police cars, and possible routes of escape. The terrain scrolls smoothly as you move ahead, and the overall effect is quite exciting. When you make a water jump, the scene shifts to a side-view close-up of the attempt. If you don't make it you cause a big splash.

There are multiple courses of increasing difficulty in the game, and at the beginning of each run you can specify which course you wish to try. Therefore mastery of one of the easier courses does not diminish the play value of the game.

I enjoyed playing *Hazard Run*, but became frustrated with it because I could never get very far, even on the supposedly easy courses. I'm sure this is more a reflection on me than it is on the game. Still, if there were a very easy course, I might have been able to become more involved with the game.—*JJA*

Jumbo Jet Pilot

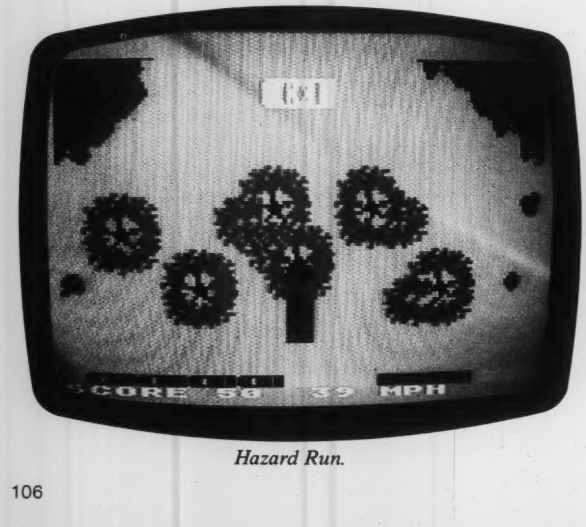
This flight simulator game puts its user at the controls of a Boeing 747. The view is of the instrumentation and directly ahead out the cockpit window. Your job is to get the jumbo off the ground, cross country, and safely back on the ground at a neighboring airport.

Doing so is a really tough job. The handling characteristics of this 747 quickly impart an elephantine cast to that term "jumbo." Just taxiing to the main runway takes about six minutes. This means that by the time you are in the air, you may already be in the mood to play a different game.

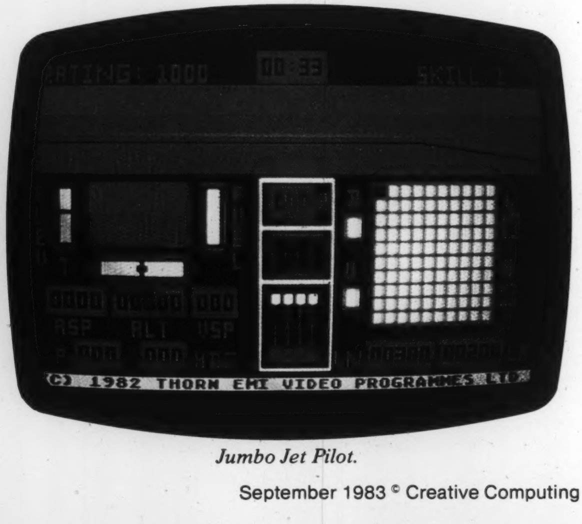
Once airborne, you must navigate to

creative computing
SOFTWARE PROFILE

Name: Jumbo Jet Pilot
Type: Flight simulation game
System: 16K Atari
Format: ROM cartridge
Language: Machine
Summary: Rather disappointing flight simulator.
Price: $49.95
Manufacturer:
Thorn EMI
1370 Avenue of the Americas
New York, NY 10019



Hazard Run.



Jumbo Jet Pilot.

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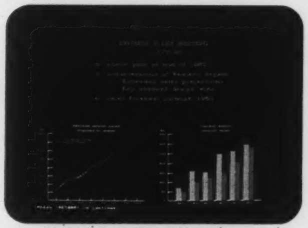

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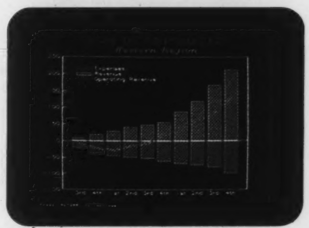

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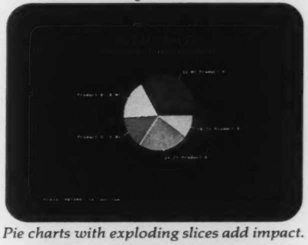

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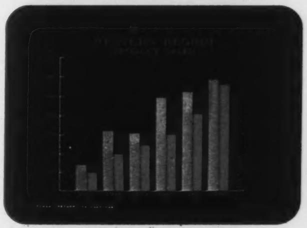

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the destination and then bring her down. I have yet to make a destination and then bring her down. I have yet to make a landing from which I can walk away. There are enough controls to make things feel somewhat realistic—I would no doubt crash a real 747 within minutes, too. And that would be even less fun, I'll bet.

The documentation explains the controls and how to use them, but gives no real accounting of how to make a successful landing. After about ten tries, you're ready for Pac-Man.

Although the screen display is colorful, there is a feeling of unfinishedness about *Jumbo Jet Pilot*. The updating of the view out the cockpit window can be maddeningly slow at times, and even when you crash dive into the ground at 600 miles an hour the effect isn't really worth getting excited about.

After having taken a look at the flight simulator for the IBM PC from SubLogic, *Jumbo Jet Pilot* seems lacking. Someday there will be a high quality flight simulation for the Atari, but I have yet to see a qualified candidate.—*JJA*

Gorf

Rocklan, the house that developed *Pac-Man* for the Atari computer and introduced a very faithful computer version of *Deluxe Invaders*, has scored once again with *Gorf*. This is another arcade favorite, painstakingly translated into a faithful home version.

Gorf combines elements of Space Invaders with Galaxian, Breakout, and other arcade games. Its four separate screens pose unique challenges, and will not be mastered without lots of practice. The object of the game is to battle your way to, then destroy, the evil Gorf itself.

The pace is frenetic, perhaps too frenetic for gamesters of the more laid back kind. After an Invaders-style opening, the game moves into a rather Galaxian mode. If you survive this, you may yet get to take a few shots at the mother ship, before it does you in.

creative computing
SOFTWARE PROFILE

Name: Gorf
Type: Arcade game
System: 16K Atari
Format: Disk/cassette/ROM cartridge
Language: Machine
Summary: Another faithful arcade recreation from Roklan.
Price: $29.95
Manufacturer:
Roklan Corporation
10600 West Higgins Rd.
Rosemont, IL 60018

Although the graphics in *Gorf* are a little blocky, the animation is smooth and playability high. If the *Gorf* arcade game was your cup of tea, the home version is a must.—*JJA*

Captain Cosmo

Here is a game that the kids will go wild for. In *Captain Cosmo*, the player gets to be a flying superhero, complete with cape.

The idea in *Captain Cosmo* is to round up the little moon-faced meanies and jail them in the zoo. To do so, the Captain zaps them with his ray, which temporarily renders them harmless. They can then be safely carried into the zoo. When everybody has been accounted for, that round concludes and another, faster round of the game begins.

If you wish to add a further challenge, more difficult versions of this basic premise introduce new, dangerous nemeses for you to deal with.

The execution of *Captain Cosmo* exhibits a good deal of humor and, well, downright cuteness. There is nothing really violent about the game, and the bad guys are sufficiently comic to render the scenario quite wholesome. This one will definitely excite the younger kids, and probably parents as well. It shows that a shoot-'em-up need not exude fascist overtones.—*JJA*

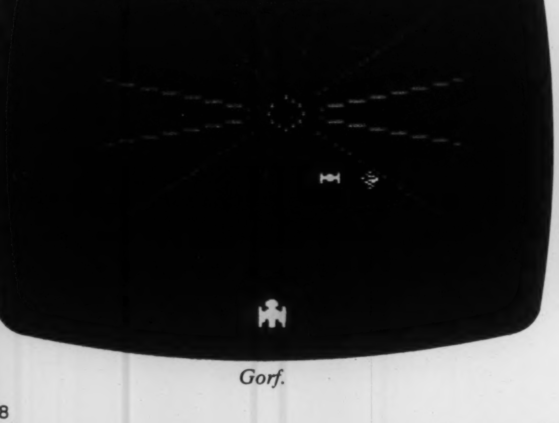
creative computing
SOFTWARE PROFILE

Name: Captain Cosmo
Type: Arcade game
System: 16K Atari
Format: Disk/cassette
Language: Machine
Summary: Delightful kids attraction.
Price: $29.95
Manufacturer:
Nexa Corporation
P.O. Box 26468
San Francisco, CA 94126

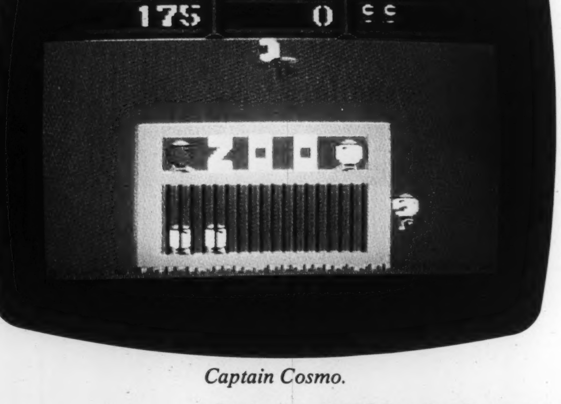
Shooting Gallery

I have always loved traditional shooting games and have lamented the fact that no truly fun and well-done shooting games have been available for microcomputers. *Shooting Gallery* has changed the situation, offering almost as much action on your Atari as on the boardwalk at Coney Island. The only thing that is missing is the smell of the powder.

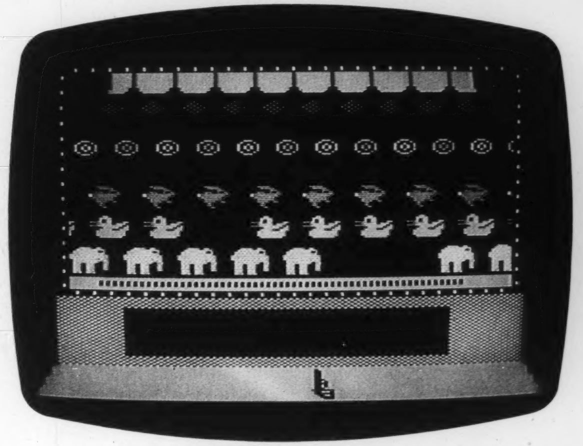
Using the joystick, you take your pistol in hand, and polish off rows of targets as they move past. Got to get past the elephants to make it to the bunnies. After



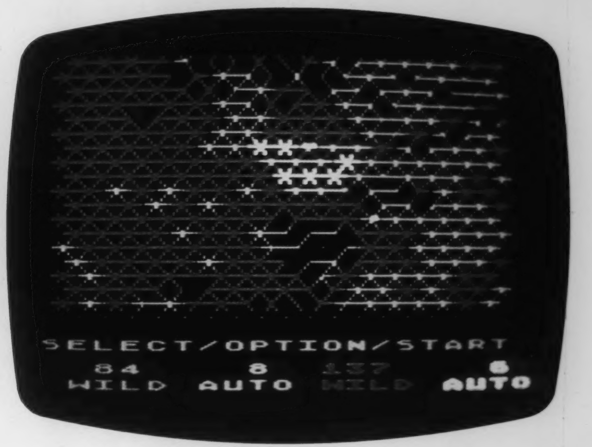
Gorf.



Captain Cosmo.



Shooting Gallery.



Worms?

creative computing

SOFTWARE PROFILE

Name: Shooting Gallery

Type: Arcade game

System: 16K Atari

Format: Disk/cassette

Language: Machine

Summary: Practically can smell the gunpowder.

Price: $29.95

Manufacturer:
Datasoft Inc.
9421 Winnetka Ave.
Chatsworth, CA 91311

the bunnies come the bulls-eye targets, which are a challenge since they change direction after every hit.

The next row is composed of "have a nice day" faces, but they are rather moody, occasionally frowning and turning blue. Don't hit one while it is blue, or an extra bunny will appear.

By the time you are finishing off the faces, you will be low on ammo. That's where the next row, made up of hard-to-hit diamonds, comes in very handy. Every diamond you hit earns you four extra bullets. But be warned: the diamonds are hard to hit. You may well expend your ammo in the quest for more.

The graphics, sound, color, and animation in *Shooting Gallery* are very nice, which adds to the fun of the game considerably. No other home video or computer shooting game that I have seen even comes close.—*JJA*

Worms?

In a way it is unfair to put the game *Worms?* into this basically "twitch" round-up for the Atari. *Worms?* can be played competitively, but it does not base its play on hand-eye coordination. It is rather a skill game, that is unique, engaging, and delightful.

The goal of the game is not to provide competition, but to provide the rewards of insight. Like Conway's game of Life, *Worms?* gives the player an intuitive feeling for hitherto unseen mathematical relationships. One round of the game, which embodies some of the best graphics and sound to be seen on an Atari, will have you thinking of the mother ship in "Close Encounters."

Players "train" colored streaks of light to move in patterns from one dot to another in a black background matrix. Each player has his own color, and every

creative computing

SOFTWARE PROFILE

Name: Worms?

Type: Strategy game

System: Atari

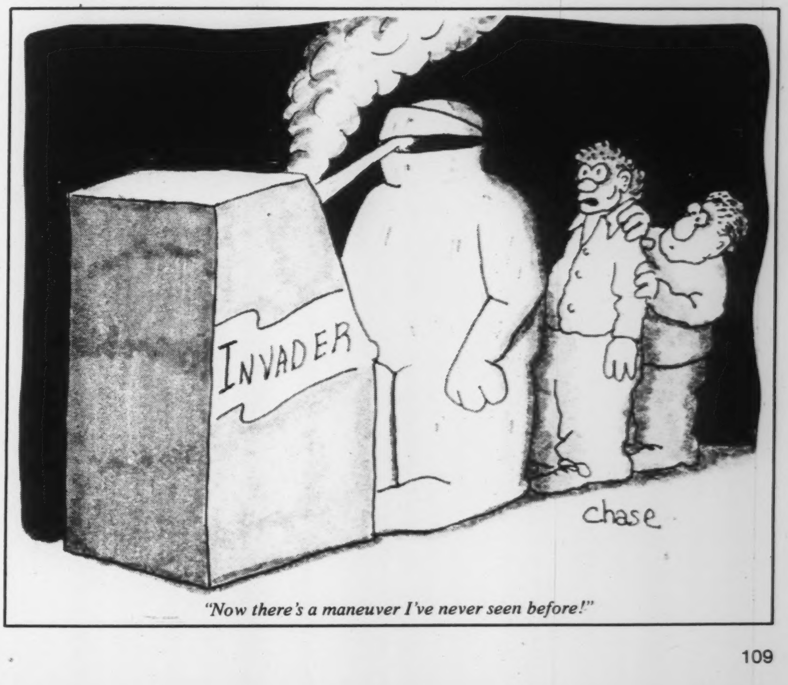
Format: Disk

Language: Machine

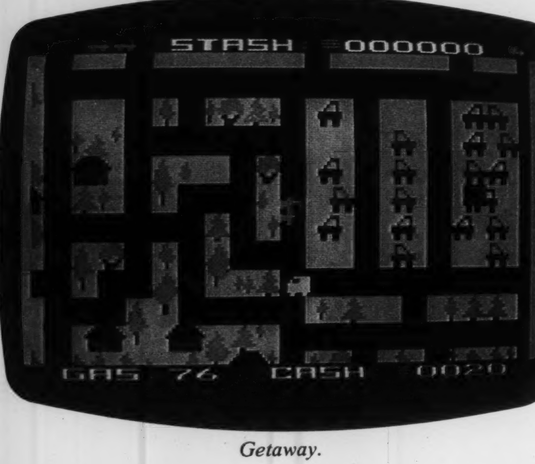
Summary: A different kind of Atari game.

Price: $39.95

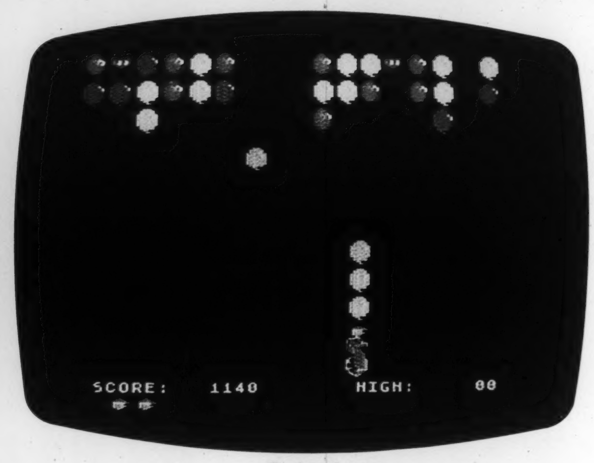
Manufacturer:
Electronic Arts
2775 Campus Dr.
San Mateo, CA 94403



"Now there's a maneuver I've never seen before!"



Getaway.



Pinhead.

direction has its own musical tone. To score points, be the one to complete all the possible junctions on a single node.

Soon the screen is alight with tuneful worms marching by "decision points" to the beat of their respective drummers. The game holds a lasting and nearly hypnotic fascination. Winning worm patterns can be made to compete against new computer- or human-generated opponents.

There is something compelling about the intricacies of pattern—from the fugues of Bach to the mosaics of the Alhambra—that makes humans rejoice. The game *Worms?* combines harmonies of pattern in an extremely original and diverting way, and is good for hours of experimentation. Then challenge the world! *—JJA*

Getaway

Ever since Chris Crawford's *Eastern Front*, many Atari owners have kept an eye out for new games with smooth-scrolling map playfields. The technique constitutes one of the most impressive graphic effects the Atari can produce. Well, *Getaway* takes advantage of this technique quite admirably. Show this game to an Apple owner, and watch him turn the color of a Mackintosh.

In *Getaway*, you are driving a car through the streets of a metropolitan area. The view is down from above, and the terrain scrolls in any of four directions as you go. It is a wonderful effect.

As you cruise, you pick up dollar signs, which add to your score, and avoid police cars, which are on patrol to catch you. Soon you start to know your way around town.

Every so often you need to stop, to drop some of your stash in a secret hiding place, or to gas up. Careful, though. You are most vulnerable when stopped.

After about six minutes of play, darkness begins to fall. This reduces visibility, so be on your guard, or risk getting caught.

creative computing
SOFTWARE PROFILE

Name: Getaway
Type: Arcade game
System: 16K Atari
Format: Disk/cassette
Language: Machine
Summary: Best scrolling game since *Eastern Front.*
Price: $29.95
Manufacturer:
Atari Program Exchange
P.O. Box 3705
Santa Clara, CA 95055

Getaway left me wanting more—so much could be done with the scrolling effect. I wish, for example, I could get out of the car and run into a building. There the game could take on a whole new aspect.

For what it does deliver, however, *Getaway* is lots of fun. *—JJA*

Pinhead

If you have been to an arcade and seen a game called Kickman, you are already somewhat familiar with *Pinhead*. If you have the game *Clowns and Balloons* from Datasoft, you may be reminded of it when playing *Pinhead*. It has the same circus-like feeling to it, and balloons play a crucial role in each game.

In *Pinhead*, you are a clown riding a unicycle from side to side upon a tightwire. Balloons drop from above, and your job is to pop them by catching each one on the top of your head (hence the name). Yellow ones drop slowly; purple ones drop a bit more quickly, and blue ones drop really fast.

Using the joystick, you position yourself underneath the falling balloons. If you miss a balloon, you can try to kick it back in the air with a quick press of the trigger. This requires precision placement and timing, but it does give you a second try.

creative computing
SOFTWARE PROFILE

Name: Pinhead
Type: Arcade game
System: 32K Atari
Format: Disk
Language: Machine
Summary: Tough but engaging version of Kickman.
Price: $29.95
Manufacturer:
Utopia Software
58 Millay Rd.
Morganville, NJ 07751

If you let a balloon hit the tightwire, you fall off, and lose a life.

The game is fun, but it is also really difficult. I found after eight or ten games that I just wasn't getting much better at it, and became a bit frustrated. Perhaps it should have started off just a bit easier and then progressed to the point at which it currently begins. Then again, maybe I'm not good enough for *Pinhead*. *—JJA*

Soccer

Thorn EMI has come up with a winner this time. As sports simulations go, *Soccer* captures enough of the flavor of its name-

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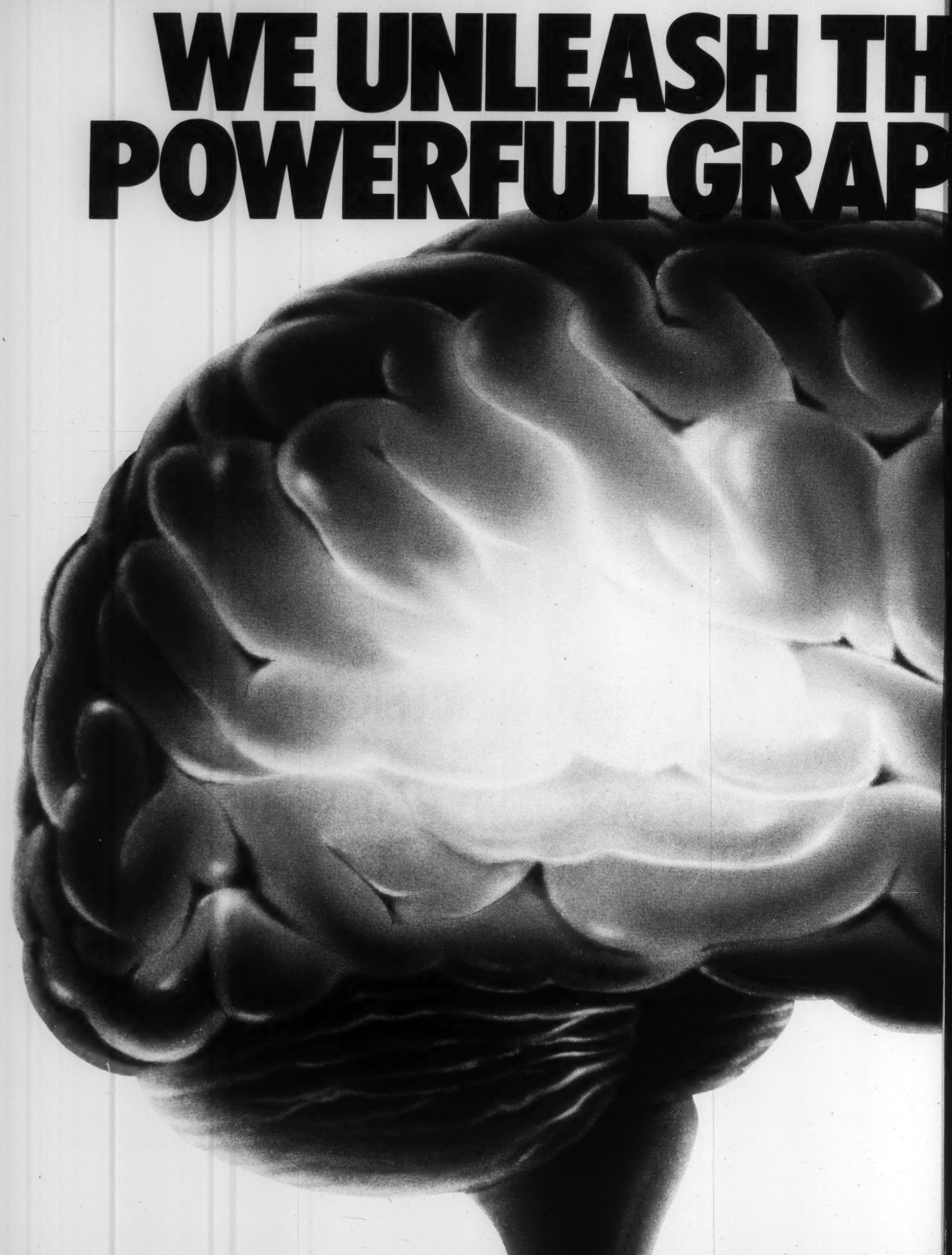
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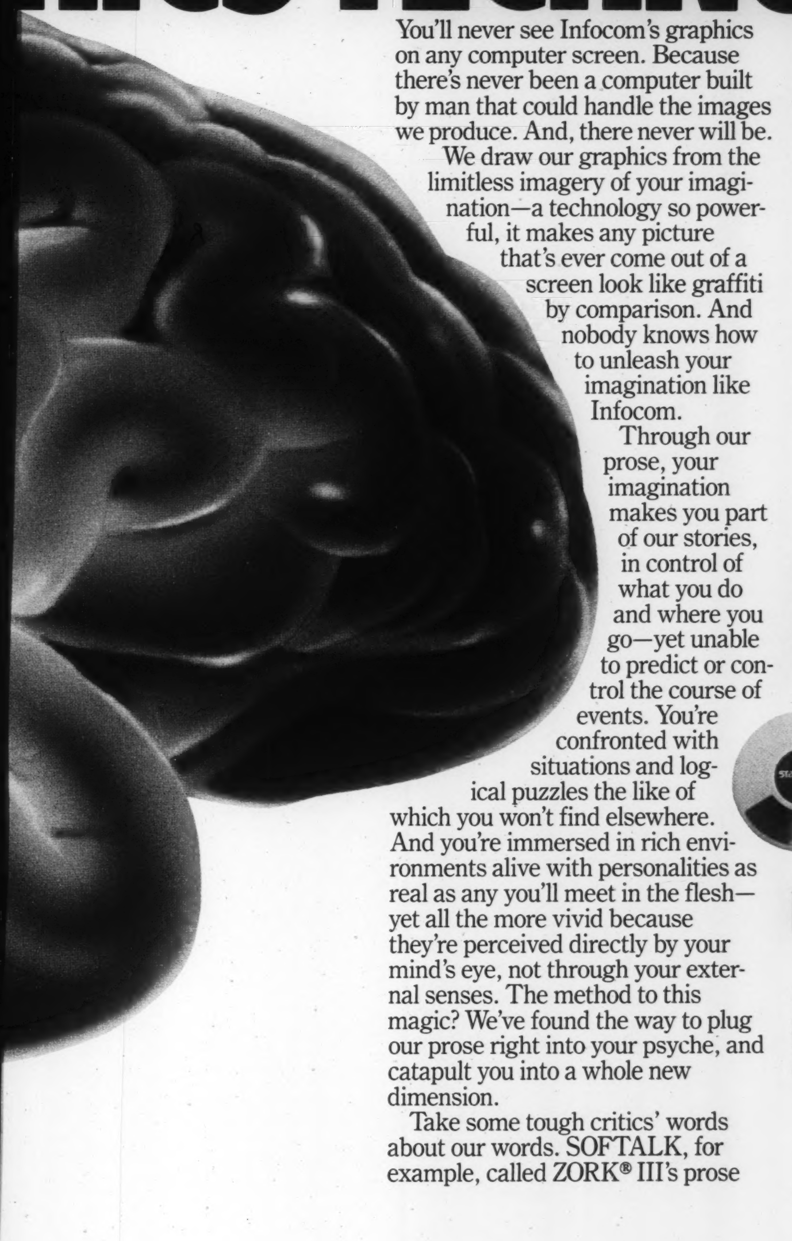

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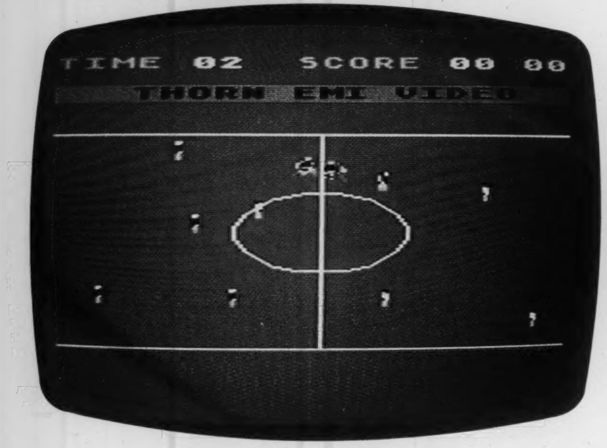
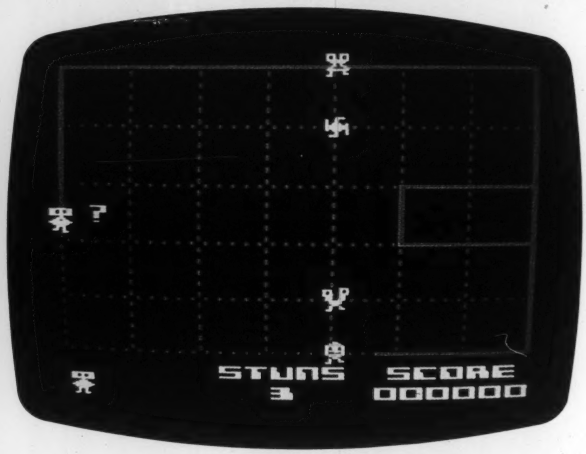


Soccer.



Kid Grid.

sake to evoke memories of Pelé.

It is important when designing a sports game to capture the essentials of the actual game and to allow players to interact as much as possible. Thorn's *Soccer* succeeds on both accounts.

creative computing
SOFTWARE PROFILE

Name: Soccer
Type: Game
System: 16K Atari
Format: ROM cartridge
Language: Machine
Summary: Good sports simulation.
Price: $49.95
Manufacturer:
Thorn EMI
1370 Avenue of the Americas
New York, NY 10019

The user can play a computer or human opponent, or choose to watch two computer opponents fight it out. The length of the match can also be present for a long or short game.

As the action moves up and downfield, the screen scrolls to remain centered on the action. Joysticks control the active players, which are chosen using the stick and trigger. The balance of each team moves under computer direction, and by and large stays near enough to the action to come into play when needed. You can pass, kick, and block other players on the field.

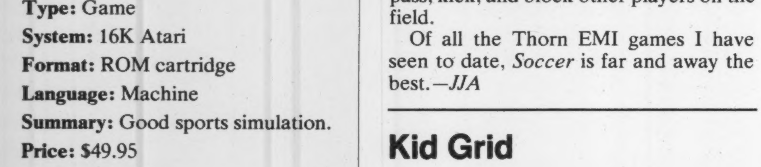
Of all the Thorn EMI games I have seen to date, *Soccer* is far and away the best.—*JJA*

Kid Grid

Kid Grid is based on the arcade hit Amidar. In both games, the player tries to close off the perimeter of playfield squares while avoiding the meanies encroaching upon him. In *Kid Grid*, you are Mr. Grid himself, attempting to enclose all the squares on the screen.

creative computing
SOFTWARE PROFILE

Name: Kid Grid
Type: Arcade game
System: 16K Atari
Format: Disk/cassette
Language: Machine
Summary: Good home version of an arcade hit.
Price: $29.95
Manufacturer:
Tronix
701 W. Manchester Blvd.
Inglewood, CA 90301



"Son, your mother and I have brought this man . . . he's going to deprogram you!"

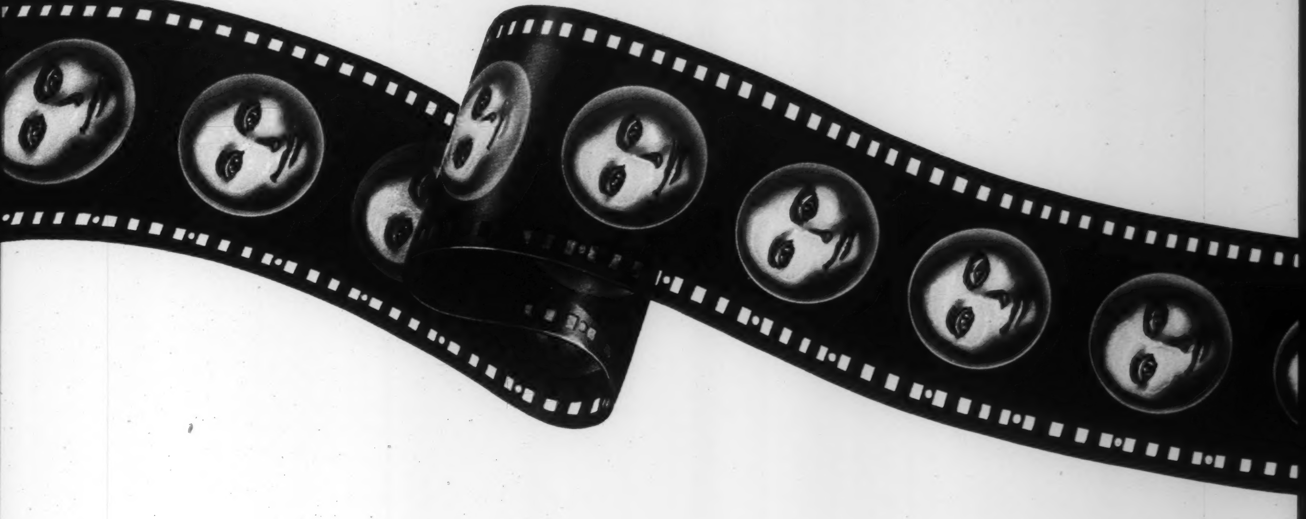
When you do close off a square, it fills in with color. If you manage to fill in all the squares on a screen, you advance to the next, more difficult screen.

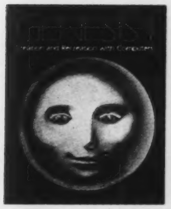
As you move to complete this task, you are chased by various nasty creatures. At the beginning of each game, you are assigned a number of stuns: unleashing one by pressing the trigger will freeze all the bad guys for a few seconds. During this time you can move freely throughout the board. You can even move right through a creature. But the effect is quite short-lived, and you are soon relentlessly pursued once again.

Kid Grid is fun, and has a good learning curve. This means that practice reaps quick rewards, and a player can improve noticeably, even in a short time.—*JJA*

Sea Dragon

Sea Dragon is from that old Atari preppie, Russ Wetmore, and I would guess is a work that predates *Preppie* and *Preppie II*, which constitute Mr. Wetmore's main claims to fame. In *Sea Dragon*, you are a





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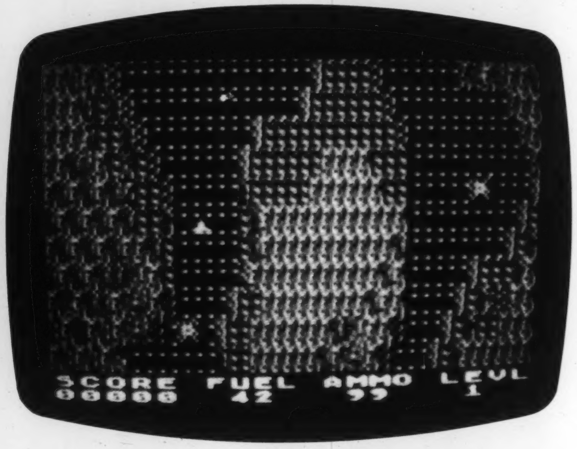
Sea Dragon.



Trion.

creative computing
SOFTWARE PROFILE

Name: Sea Dragon
Type: Arcade game
System: 16K Atari
Format: Disk/cassette
Language: Machine
Summary: Underwater escapades.
Price: $29.95
Manufacturer:
Adventure International
Box 3435
Longwood, FL 32750
(305) 862-6917

submarine, attempting to pass through treacherous, mined enemy waters. Only careful steering and well-placed torpedoes will allow you to negotiate the enemy harbor successfully.

You start out with five subs. You control speed and steering, but you cannot turn around. The mines ahead, which are buoyed from cables moored to the seafloor, break loose at random intervals. This is when they are most dangerous. Timing your forward motion becomes critical—and don't graze the bottom or you're doomed.

The game screen is colorful and scrolls smoothly to the right as you play, revealing new underwater terrain.

I enjoyed playing *Sea Dragon*, and was able to improve quite a bit even in a single sitting. You cannot master the game, as tougher levels always await. In the advanced levels ships drop depth charges on you, and even lasers show up.

Still, *Sea Dragon* seems to be one of Russ's lesser efforts. While it is fun, I would much rather play *Preppie*, or even its sequel, *Preppie II*. *Sea Dragon* simply doesn't have the staying power of the *Preppie* games. —*JJA*

Trion

Trion is another space shoot-'em-up, which in some ways resembles an upside down *Caverns of Mars*. In the game your spaceship sails upscreen, shooting bad guys, avoiding obstacles, and gathering fuel. You must move ahead at all times, but can accelerate or decelerate forward movement, and move left or right, using the joystick.

The things that set *Trion* apart from *Caverns* and other scrolling shoot-'em-ups are its three-dimensional feeling, and its multi-screen play. Although the movement is constantly upward, there is a feeling of forward motion as well. You can actually fly under bridges and behind walls, and that adds to the enjoyment of the game. In addition, there are three different screens: the Valley, the Tunnel, and the Barrier.

The Valley is the easiest, usually offering multiple escape paths. Touching a barrier will not result in immediate extermination, but will seriously deplete your shielding reserves. Stick to the river!

The Tunnel offers the best three-dimensional effect of the game. Ships fly out from the center of the tunnel to do battle with you. You really get a feeling of forward motion in this stage of play.

creative computing
SOFTWARE PROFILE

Name: Trion
Type: Arcade game
System: 32K Atari
Format: Disk/cassette
Language: Machine
Summary: Upside-down *Caverns of Mars.*
Price: $29.95
Manufacturer:
London Software
374 Wildwood Ave.
Piedmont, CA 94611

Your first encounter with the Barrier will be an exciting one. This board is the most challenging in the game, as you try to blast your way through to another, tougher Valley. The glowing bricks through which you must negotiate are reminiscent of *Breakout* in some ways. If you make it through this board, you will get a good score.

As you blast the enemy out of the skies, you must keep a careful watch on your fuel and ammunition. Skillful flying will allow you to replenish your supplies. You may also find that a quick foray to gather fuel or ammo will be fatal.

The three-dimensional effect of *Trion* is rather mild compared to games like *Star Raiders* or *Zaxxon*, but certainly adds to the play value of the game. If you were hooked on *Caverns of Mars*, you will enjoy playing *Trion*. —*JJA*

Fort Apocalypse

One of the most exciting movies of the summer of 1983 was *Blue Thunder*. It is an action film that stars Roy Scheider as a pilot who steals a high-powered helicopter. The chase scenes are stupendous, and the action is red-hot. One of the most exciting games for the Atari computer also features an advanced helicopter. The program is *Fort Apocalypse*.

Programmed by Steve Hales, *Fort Apocalypse* resembles a cross between *Choplifter* and *Caverns of Mars*. While the latter is a very popular game, it lacks depth and variety. *Choplifter* is simply a converted Apple game; therefore it does not fully utilize the superior graphic capabilities of the Atari computer. *Fort Apocalypse* taxes both the player and the Atari.

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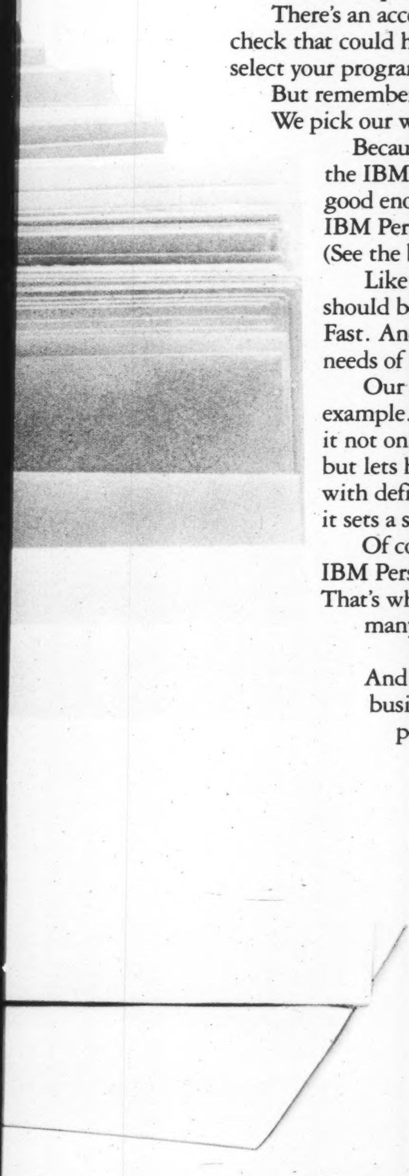

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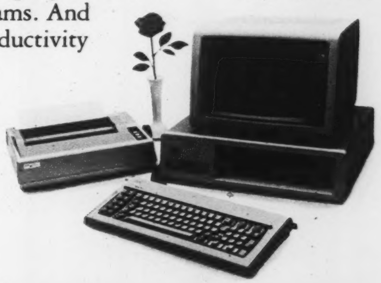

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The object of the game is to pilot a highly maneuverable helicopter into the depths of Fort Apocalypse, a heavily guarded enemy station. Once you have penetrated the outer defenses, you must rescue the hostages that are scattered throughout the underground complex and then destroy the fort itself. All the while, you must avoid running into the walls, or getting shot out of the air by the ever-present enemy forces.

creative computing
SOFTWARE PROFILE

Name: Fort Apocalypse
Author: Steve Hales
Type: Arcade
System: 24K Atari computers, Commodore 64
Format: Disk/cassette
Language: Assembly
Summary: Choplifter and Caverns of Mars combined
Price: $34.95
Manufacturer:
Synapse Software
5221 Central Ave.
Richmond, CA 94804
(415) 527-7751

You control the chopper using a single joystick. Moving the joystick in any direction causes the copter to move in the chosen direction. As in *Choplifter*, if the helicopter is facing right or left, you can fire missiles. When it is facing out toward you, the chopper drops bombs when the fire button is pressed.

The screen is divided into two sections. The top portion contains vital information and a radar scanner similar to the ones found in games like Defender. On the navitron, as it is called, you see a representation of the surroundings and the enemy forces in the vicinity. Most of the screen is devoted to the playfield on which all the immediate action takes place.

Fort Apocalypse has a brilliant display, with a multitude of different colors and detailed graphic characters. When you move, the helicopter always remains around mid-screen, and the terrain scrolls in the direction opposite that in which you are flying. The Atari graphics chip does a heck of a job scrolling all of that stuff around—it is one visual that can never be duplicated on an Apple.

As far as the game itself goes, I like it. The Fort complex is divided into two distinct sections or caves. You must rescue eight men in each cave to progress to the next level. It is not mandatory to rescue all of the prisoners, but you must destroy Fort Apocalypse to return to the surface.

There are certain locations in the caves where you must blast through huge expanses of cinder block using your missiles and bombs. These barriers are sometimes 20 blocks deep and twice as thick. Needless to say, without a rapid-fire adapter, breaking through to the other side takes a long time and causes wear and tear on your trigger finger. Both skill and patience are required here.

After the Fort has been destroyed and all sixteen men accounted for—either rescued or killed—you can head back up to the starting point. At this time the enemy will try desperately to destroy you. A mad dash ensues as you race to safety above ground. When you return to the fuel depot on the surface, the game ends, and your score is displayed along with the military rank you received for your endeavors.

The cave complexes are rather extensive, but everything is always located in the same place game to game. After you become familiar with the underground area and the tricks to defeating the traps, the game holds very few surprises. In fact, even though there are selectable skill and gravity settings, *Fort Apocalypse* loses a lot of its appeal once you complete your first successful mission.

Fort Apocalypse stands tall among some of the best death and destruction programs available. If you like games in which explosive displays are accompanied by booming sound effects, grab a copy of *Fort Apocalypse*. If joystick "twitcher" games are not your piece of cake, better look elsewhere.—*OWL*

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Pharaoh's Curse is a new offering from Synapse Software. Written by Steve Cole-

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SOFTWARE PROFILE

Name: Pharaoh's Curse
Author: Steve Coleman
Type: Arcade adventure
System: 32K Atari computers
Format: Disk/cassette
Language: Assembly
Summary: Even mummy will like this
Price: $34.95
Manufacturer:
Synapse Software
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Richmond, CA 94804
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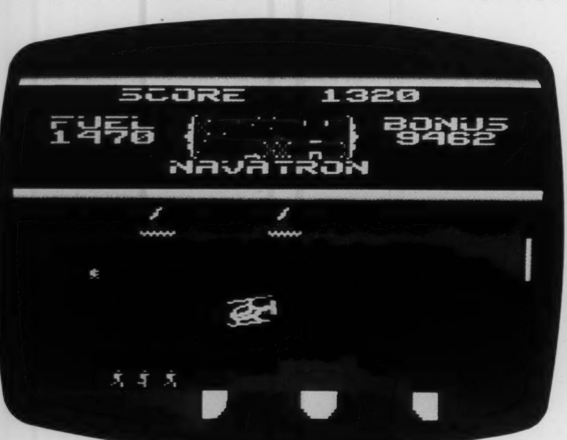
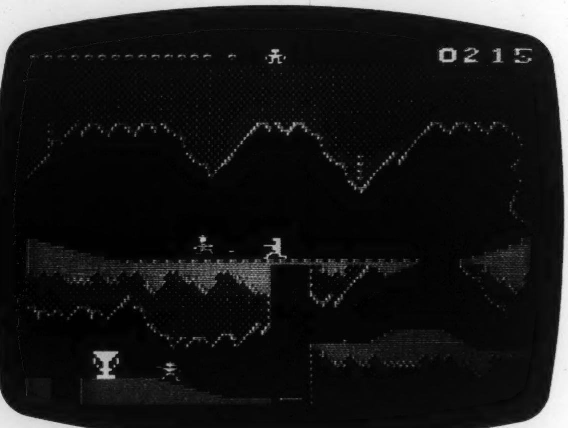


Fort Apocalypse.



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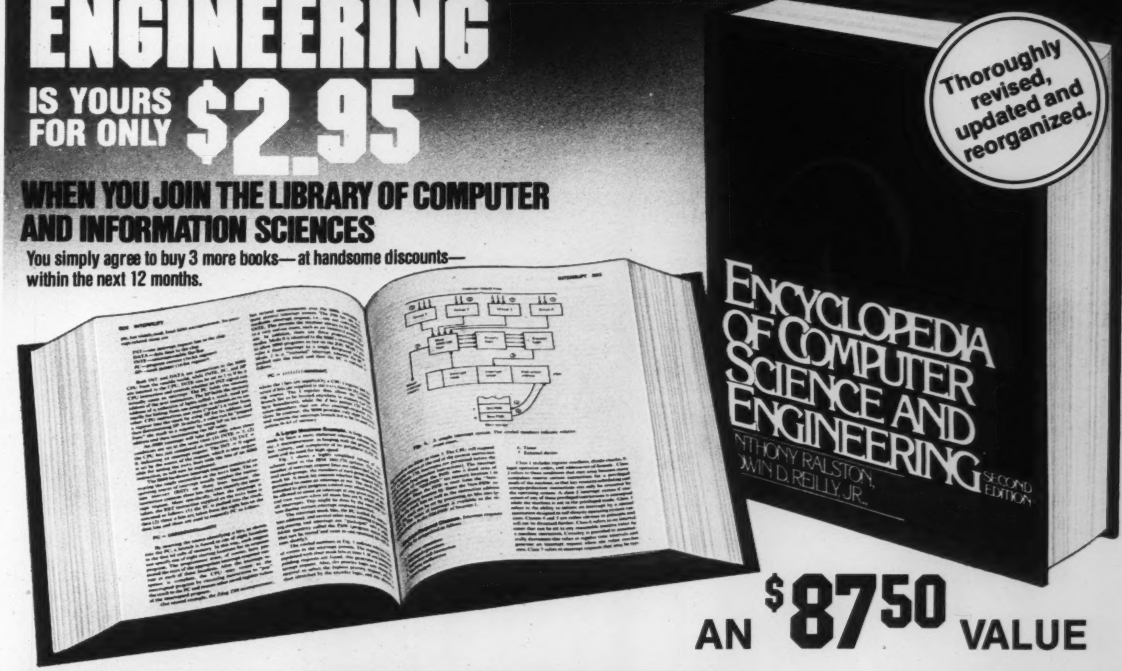
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Atari Games, continued...

man, this game vaguely resembles *Miner 2049er* in that both have a large array of different screens. *Pharaoh's Curse* has 16 distinct rooms, each with its own treasures, traps, and tricks.

The object of *Pharaoh's Curse* is to collect all 16 treasures by simply running your explorer over them. This is not as easy as it may sound. You must defeat sundry traps designed to make you a permanent inhabitant of the tomb.

The tomb has two creatures that guard against intruders such as you: the mummy and the Pharaoh. Touching either of these is not lethal, but either can kill you with a shot from his gun. Getting caught on any of the traps when they are set is deadly. Unlike most other climbing games, you do not die when you fall—no matter how great the distance. This can be used to your advantage.

A certain degree of manual dexterity is required to manipulate the joystick effectively. Tilting the stick right or left moves your character in those directions. Jumping is accomplished by throwing the stick to the forward diagonals. If you press the fire button and move simultaneously, you shoot a round from your pistol. If you hit a mummy or the Pharaoh with your shot, he temporarily disappears.

The position of each room, as well as the traps and treasures within, are always the same from game to game. Only your starting position differs. Each room in *Pharaoh's Curse* contains at least one shining gold treasure. On some screens you find golden keys that can be used to open secret passages into other portions of the immense tomb.

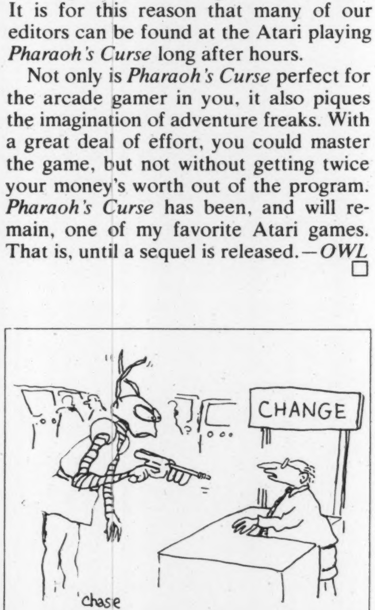
After you claim a treasure by passing your explorer over its position, a marker is removed from the rack in the upper lefthand portion of the screen. When you have collected all of the prizes, a special code is displayed. By typing in this code at the beginning of the next game, you advance to a more difficult level. The tomb layout remains the same, but the enemy becomes much more ferocious, and the traps are activated more frequently. By constructive cheating, you can deduce what the code word is without completing the first level. Hint: take one letter at a time.

The tomb has two creatures that guard against intruders like you.

Pharaoh's Curse has a very addictive quality about it. There are certain treasures that remain elusive until you finally come upon secret tricks that allow you to attain them. Even if you know exactly how to go about grabbing a prize, the act of getting your hands on it may prove quite difficult. Everything can be fouled up if the mummy or the Pharaoh randomly drops in for a visit.

Because you aren't usually killed off without reasonable cause, you get upset at your own stupidity, rather than the program. Every time you die, you end up wanting to "beat" the game even more. It is for this reason that many of our editors can be found at the Atari playing *Pharaoh's Curse* long after hours.

Not only is *Pharaoh's Curse* perfect for the arcade gamer in you, it also piques the imagination of adventure freaks. With a great deal of effort, you could master the game, but not without getting twice your money's worth out of the program. *Pharaoh's Curse* has been, and will remain, one of my favorite Atari games. That is, until a sequel is released.—*OWL* ☐



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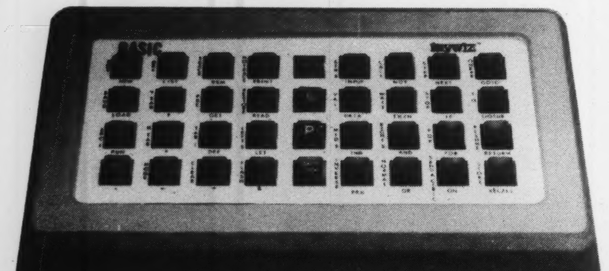

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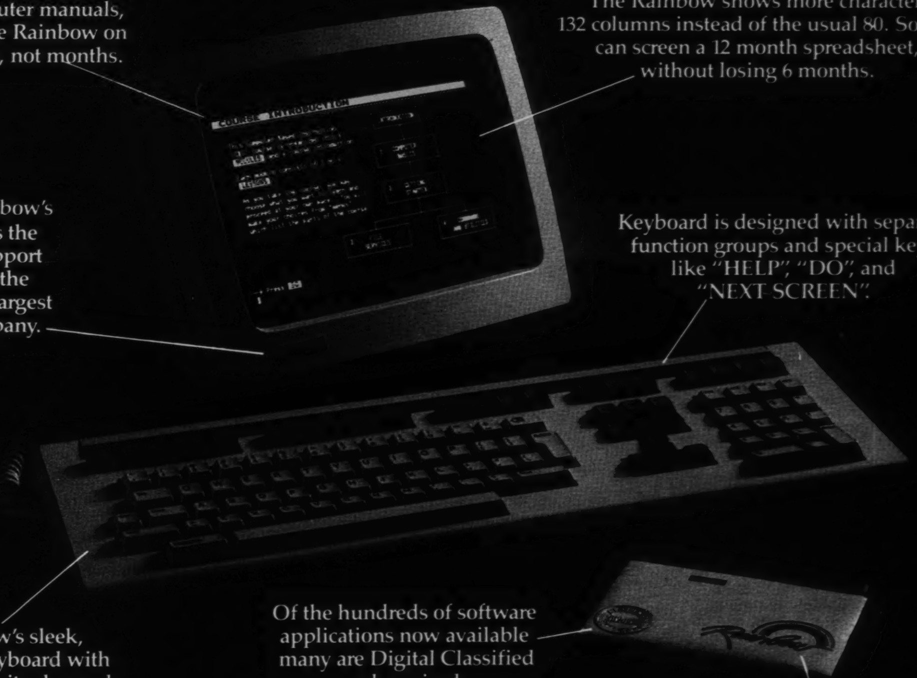

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Games For The PC To Challenge Your Reflexes And Your Intellect

Joe Devlin

Space Miner

Space Miner is a colorful, exciting shoot-'em-up space game for the IBM PC running PC-DOS. It is a good game for indoctrinating your children into the values and perils of capitalism as well. The object of the game is to earn as much money as you can on a mining voyage through an asteroid belt. Money is earned by collecting ore from asteroids with a robot claw and also by blasting the poor (space) natives who rain down on you from above.

Space Miner is played from the computer keyboard. The cursor keys on the keypad provide your ship with directional control. Ship motion is a bit odd in that no matter which way the ship moves, its nose stands ramrod erect, pointed toward the top of the screen. This is because the space monsters as well as the meteors, space mines, and comets that provide your sustenance all come from the top of the screen.

There are two ways to earn points—by blasting the attacking space monsters and by collecting passing meteorites. The two top function keys on the left of the keyboard are used to fire the cannon and to operate the robot arm. Function key 5 allows you to freeze the game. Function key 5 allows you to toggle off the sound, which is a good idea because the music is quite raucous.

The three monster species are wonderful. All three look like crosses between colorful Japanese Kabuki masks and fiercely clawed Rhino Beetles. My favorite is Sparky (strange name for a Kabuki mask), partly because he is worth the most points and partly because of the artful way he thrusts his tongue out at you when he has been blasted into his death throes.

Each player is given three turns. Fuel and missiles are supplied in limited quantities as indicated by the bar charts at the top of the screen. They can be replenished by snatching up a passing comet or space mine with your robot arm.

Time, on the other hand, cannot be thwarted. Your mothership will arrive at the preselected time to collect you and your cargo. Should you get blasted by a monster before she arrives, you will forfeit both your turn and all the cargo you collected during that turn.

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SOFTWARE PROFILE

Name: Space Miner

Type: Arcade space game

System: 64K IBM PC with color adapter card

Format: Disk

Language: Machine language

Summary: Simple, but engaging space game

Price: $29.95

Manufacturer:
Resolution Software
8 Edgewood Blvd.
Providence, RI 02905
(401) 461-2417

Space Miner is not a game that gets impossibly difficult. A good player can stay alive until the mothership comes. The challenge is to get the highest score possible by collecting the most meteorites without getting killed. High scores are saved on disk so you can compare your wealth against that of earlier miners.

In conclusion, *Space Miner* is a simple-minded but beautifully done capitalist tool for minors and adults alike.

Mystery Message

I remember watching TV game shows during my school days. I remember my prideful jubilation when I could come up with the answer before any of the contestants. I would sit there in my chair and watch the contestants try to think of some perfectly obvious word. (Anything you already know is obvious.)

I also remember the sense of injustice I felt when viewing game shows in which the outcome of every game depended on the last question. Do you remember this scenario? Contestant A was a bon fide genius who solved every puzzle in record time. Contestant B had been in a daze during his entire tenure on the screen. Nevertheless, the MC informed both of them that the final outcome of the contest depended upon the answer to the last question. How unfair! Yet the chance that the tables could be turned with one lucky guess added an extra element of uncertainty to what might otherwise have been a routine game.

When played with two or more people, *Mystery Message* imparts much of the same emotion as that game show long ago. The players take turns trying to guess the letters of a phrase outlined at the top of the screen.

They have three choices: guess a consonant, buy a vowel for 1000 points, or guess the solution. Each player goes in turn. A turn lasts until an incorrect guess is made.

But as in that game show everything rides on the last question. Points earned by guessing letters are awarded only temporarily. Only the person who finally guesses the word gets to keep his points. How unfair! But this means that no game is over until the points are tallied up.

Mystery Message is a guessing game for one, two, or three players. At the top of the screen is the line of blanks into which letters are placed. Below that is the wheel which turns, selecting the point value of each guess. On the right is the clock which counts down the 20 seconds allotted for each guess. Next to the clock is a box which indicates all the letters which have already been guessed.

Each game begins with one of the players guessing a letter. When a player elects to choose a consonant, the dollar meter

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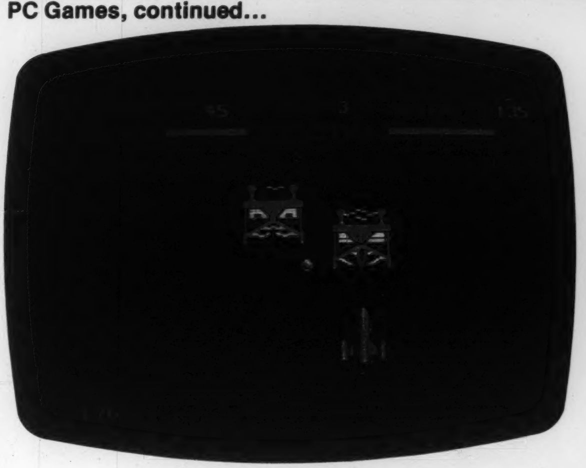
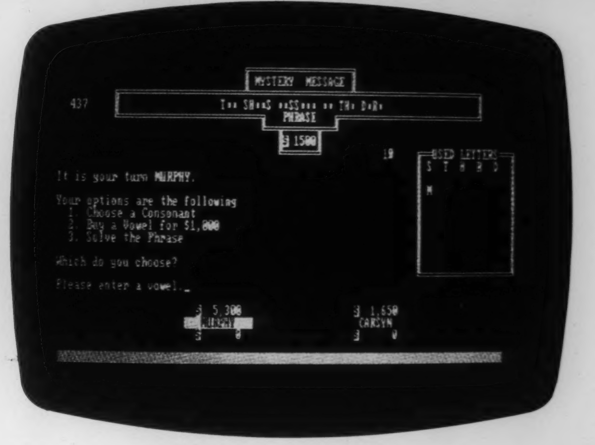


Space Miner.



```
MYSTERY MESSAGE
437
PHRASE
$ 1500
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USED LETTERS
S T H R D
M
It is your turn MURPHY.

Your options are the following
  1. Choose a Consonant
  2. Buy a Vowel for $1,000
  3. Solve the Phrase

Which do you choose?

Please enter a vowel._

$ 5,300            $ 1,650
MURPHY             CARSYN
$     0            $     0
```

Mystery Message.

creative computing

SOFTWARE PROFILE

Name: Mystery Message

Type: Word Game

System: 64K IBM PC with color graphics adapter

Format: Disk

Language: Machine language

Summary: A challenging adult word game.

Price: $34.95

Manufacturer:
Social Systems Corporation
1621 Fulton Ave., Suite 28
Sacramento, CA 95825
(916) 481-2576

spins and displays a dollar amount from $200 to $2000. This amount the player wins for each appearance of the consonant in the phrase. There are also occurrences of Lose Your Turn and Broke, each of which causes you to lose your turn. In addition, Broke causes you to lose all winnings for the current game.

The 500 phrases included in *Mystery Message* can be chosen randomly, in sequence, or by number. All phrases are on a relatively high (adult) level. We hope that there aren't many kids around who would guess "Intercontinental Ballistic Missile" in the first round.

In general, *Mystery Message* is nicely implemented. The wheel spins rapidly, prompting appears promptly, and letters are filled in efficiently. There are a few bugs, however. Sometimes, a previous prompt is not erased before the next one overwrites it. If you type too quickly, the buffer gets cluttered, and the game oscillates for a while until the buffer is cleared. (The game does not crash, though.)

If you enjoy playing Hangman-type word games, and you enjoy an element of suspense thrown in too, then you'll enjoy playing *Mystery Message*, alone or with an opponent or two.

Spyder

There are more than 30,000 species of spiders. All have movable fangs and most have poisonous glands located next to the fangs. Most are harmless to man. There are a few exceptions. Among those poisonous to man are the so-called "spyders" that lurk in the caves of the game by the same name.

In the game of *Spyder* you control four men trapped within a cave infested with web spinning spyders. Allow a spyder to slide down from the cave rooftop onto one of these poor fellows, and you are down one man. Fortunately each man is equipped with a laser gun that can be used to cut down the descending arachnids.

creative computing

SOFTWARE PROFILE

Name: Spyder

Type: Arcade game

System: 64K IBM PC with color graphics adapter

Format: Disk

Language: Compiled Basic

Summary: Not terribly challenging for dedicated arcaders.

Price: $39.95

Manufacturer:
Mirror Images Software
1223 Peoples Ave.
Troy, NY 12180

Laser guns can only be fired directly upward. To kill a spyder, the man must be positioned directly below the creature. This is done by manipulating the left and right cursor keys. Although extra powerpacks do materialize from time to time, each gun has a limited number of shots in its powerpack. So good aim is important. Points are gained for each spyder hit. Missed shots cause the deduction of points and chip off pieces of the cave roof.

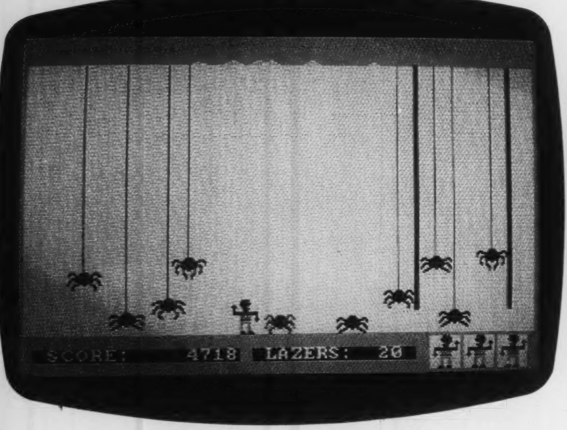
With luck you can shoot all the spyders before one reaches the ground or lands on your head. Should you miss some, the hoedown begins. Spyders can then attack from the ground as well as the air. Your only recourse if this happens is to stomp the bugs before they get you.

Squishing spyders attacking from the right and left requires you to flail away on the F9 and F10 keys. Each keystroke slams a giant foot to the ground and, if properly timed, allows your man to dance his way through the approaching horde.

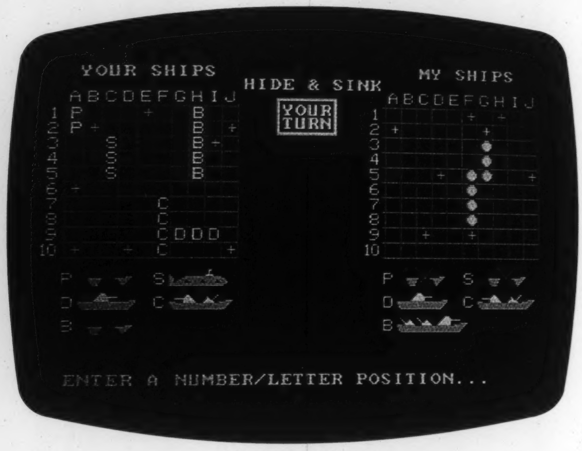
There are ten levels of play, ranging from "easy" to "at your own risk." At the advanced levels more spyders slide down their webs faster and flying scissors swoop across the screen, cutting the webs. With the webs cut, the spyders fall toward the ground at a much more rapid rate. The game ends when all the men have been webbed.

Each level of difficulty starts with four initial rounds. Complete all four rounds and you enter a bonus round during which the object is to shoot all the developing eggs before they turn into attacking spyders. Kill them all and you are awarded a bonus man and return to the game for four more rounds at the next higher level of play.

Basically, *Spyders* is a version of Space Invaders. Like Space Invaders, the object of the game is to shoot the enemy before he reaches the ground and destroys you.



Spyder.



ENTER A NUMBER/LETTER POSITION...

Hide and Sink.

The fact that the game does not end when the spyders reach the ground should provide an extra element not found in Space Invaders. In fact, it does not because the spyders are too easy to stomp. Rapid strokes of the stomping keys will kill all the spyders crawling toward you from one side. The situation would be more desperate if the critters started advancing from both sides. This danger can be avoided simply by blasting an area free of spyders on the left or right of the screen. Thus, dedicated game players looking for a real challenge will be frustrated by how easy *Spyder* is to beat. Games clods and children will be pleased by the opportunity to glimpse the usually forbidden higher difficulty levels.

Hide and Sink

Hide and Sink is a sea war game that provides three variations on the board game Battleship. Each of the three versions pits a single player against the computer in a game of hunt and destroy, played on a ten by ten sea grid.

You and the computer command equally matched fleets. Your fleet consists of a PT boat, a submarine, a destroyer, a cruiser, and a battleship. Each craft is a specific length and possesses a certain amount of firepower. You hide your ships where you wish on the left sea grid by telling the computer where the nose of each craft lies and how it is oriented. The computer automatically hides its fleet on the righthand grid and promises not to peek at your selection of hiding places.

The battle begins as you enter the letter-number coordinates of the spot on the enemy's grid you wish to attack first. Each shot you take is marked by an X for a miss or a letter indicating the type of vessel hit. When firing a missile you must specify which ship, PT boat, or sub is launching the weapon. After you have fired your first salvo, the computer gets to shoot at you. If you hit a ship, it catches on fire where hit.

There are three versions of the game. The versions differ in the number of shots that may be taken per round, the type of firepower available, and whether the game ends with the destruction of all weapons or all ships in one of the fleets. A nighttime option can also be engaged. This option removes all indications of the type of craft hit from the sea grid. Thus you know when your weapons have struck a vessel, but do not know the length or type of vessel hit. Therefore you use more shots as you try to locate the remainder of the damaged ship.

If you liked Battleship, the board game, you will probably like this computerized version. They are very much alike. The primary difference is that the computer version must be played solitaire, with the computer acting as your opponent, while the board game requires another player.

The computer version does have a few unique features. For example, the computer will not let you attack the same spot twice, and it shows you where its ships were hidden when you lose the game. Nevertheless, the differences between the computer version and the board game are minor. It makes me wonder why anyone would go to the trouble of remaking a board game for a computer if he couldn't add something to the game? The board game is bound to be cheaper and a lot more portable. Besides all else being equal, I would rather play against another person than a computer. There is little joy in beating a computer. I want to hear my opponent moan as his last ship goes under.

creative computing

SOFTWARE PROFILE

Name: Hide and Sink

Type: Warfare strategy game

System: 64K IBM PC, and color graphics adapter

Format: Disk

Language: Compiled Basic

Summary: Remade board game that plays like a board game

Price: $29.95

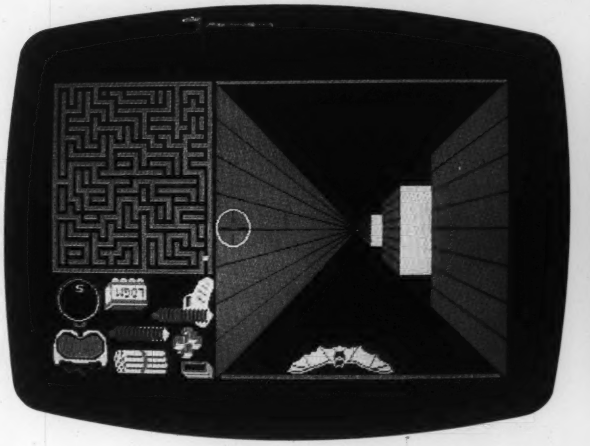
Manufacturer:
Mirror Images Software
1223 Peoples Ave.
Troy, NY 12180

Shultz's Treasure

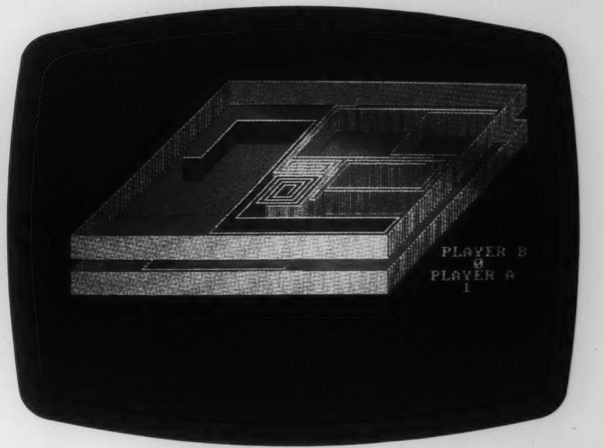
Shultz's Treasure is one of those games that are exciting to discover, even if they are not always satisfying to play. It is a hybrid—an adventure game, in which you must weave your way through a maze, and an arcade game, in which your gaming life depends upon how quickly you can blast attacking bats, spiders, and rats. Because its design is so ambitious, the accomplishments of *Shultz's Treasure* are remarkable, and its deficiencies are understandable but very disappointing.

The object of the game is to enter the Lost Dutchman's Gold Mine, locate and blast out the mother lode, then escape to the outside without being killed.

The graphics are unusual and exciting. The mine you traverse is made up of a series of tunnels. At the start of the game you find yourself looking down a short corridor that is the entrance of the mine. Your passage through the mine is directed either by joystick or keyboard. A leftward



Shultz's Treasure.



Super Novatron.

movement of the joystick or a press of the INSERT key and you turn left and begin moving down a long corridor with a wall on the left and a series of passages on the right. You have several choices—you can turn right as you pass a corridor (by moving the joystick to the right or hitting the DELETE key), you can go forward into the maze, or you can head back in the direction from which you came.

To help you make your way through the mine, you can use a variety of tools and weapons. On the first level, you start out with everything you need to get the gold and get out. On the seventh level, you start out with just a mazer weapon and a mine car and you must scour the tunnels for the other things you need.

It is easy to tell which tools you have amassed by looking on the right of the screen. For example, on level one you start with a mazer gun, an extra mazer powerpack, night goggles, a compass, a gold detector, a stick of dynamite, a mine car, and the path finder. A picture of each of the gadgets you have acquired stays on the screen until you lose it.

The path finder is an electronic gizmo that helps you keep track of where you are in the maze. Your current location is marked on the map that appears in the lower right of the screen as long as the pathfinder is in your possession. If you lose your path finder, the dot that indicates your position in the maze disappears. Each maze is quite complicated. Without the pathfinder it is very easy to get lost, especially when critters start attacking.

You never know when you will come under attack. Turn any corner and you may find a rabid rat, mutant tarantula, or bat rapidly approaching, growing larger by the instant as it closes in for the kill. When faced with one of these creatures you have two choices—run or fight.

Sometimes fleeing is the wise action to take. But turning your back on a beasty that has gotten too close is likely to mean death. You can fight if your mazer is loaded. Press the top fire button on the joystick or the F9 function key on the keyboard to activate the sight on the mazer. If you are fortunate, you will be able to center your sights on the approaching menace and blast him before he gets you.

Tarantulas and rats bite, sapping your strength as indicated by the lifeline on the top of the screen. Bats will bite only if you don't have anything left for them to steal. Each time they steal something they deposit it somewhere else in the mine where you might find it again in your travels.

With luck and skill you can find the gold buried in the mine, blast it out with the dynamite and remove it from the mine in the mine cart. To be perfectly honest, in several hours of game play I never successfully escaped with the gold. Even at the first level the game can be quite challenging.

Part of the reason the game is so difficult is that aiming and firing the mazer require a technique I was unable to master. The gun sight acts like a billiard ball in space. Once in motion it stays in motion until you stop it with exactly the right counter force or until it strikes a wall.

There are some things in life that are impressive, even though they are not always much fun. What this game has going for it is its originality, complexity, and beautifully done perspective graphics. You actually feel as if you are traveling down the corridors of a spooky old mine.

Unfortunately, other aspects of the game fall short of the high graphics standards. In particular, the control of the mazer weapon is ponderous and makes the game play frustrating at times. Such objections, obviously, are entirely subjective. If you are a joystick wiz, you may find aiming the mazer a challenge rather than a chore. In any case, *Shultz's Treasure* is lovely to look at; its design is complex and interesting, and it succeeds on many levels. I guess we can't all be weapons experts.

creative computing

SOFTWARE PROFILE

Name: Shultz's Treasure

Type: Arcade maze adventure game

System: 64K IBM PC, and color graphics adapter

Format: Disk

Language: Assembly Language

Summary: Beautifully done graphics but crude weapons control

Price: $34.95

Manufacturer:
Verisoft Works
313 W. Rosal
Chandler, AZ 85224
(602) 892-2113

Super NovaTron

Super NovaTron is a high-speed strategy game which involves building walls to trap your opponent (the computer). Games of this sort have been around almost as long as microcomputers have existed. If you saw the movie *Tron*, you saw a cinematic version of the game in which the heroes tried to trap bad guys with the trail left in the wake of their speeding motorcycles. Several flourishes

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(143)

have been added to this version of the game to provide visual and auditory flash, but they do not affect game play to any great extent.

The game begins with two walls moving toward each other from opposite sides of the screen. You control the wall forming on the right; the computer controls the one on the left. Using either the keyboard or the joystick, you can turn your wall to the left or the right. The purpose of all this construction is to trap the wall being built by the computer, forcing it to crash into your wall, itself, or the periphery of the screen.

There are three levels of difficulty. Even the first level, in which wall-building proceeds at a reasonable pace, can be quite challenging. Part of the challenge comes from the fact that the game is played from the perspective of the wall rather than from your perspective. For example, a left tug on the joystick turns the wall to its left. This may be your right or your left depending upon the orientation of the wall. If the wall turns to its left while it is heading toward the bottom of the screen, it will actually turn to your right. It takes a while to learn to play the game from the perspective of the wall even at the slowest speed. The fastest speed requires more coordination than I possess.

creative computing

SOFTWARE PROFILE

Name: Super NovaTron

Type: Maze building

System: 64K IBM PC, and color graphics adapter

Format: Disk

Language: Assembly Language

Summary: Flashy but otherwise ordinary

Price: $34.95

Manufacturer:
Verisoft Works
313 W. Rosal
Chandler, AZ 85224

Super NovaTron makes use of some very colorful graphics. The game opens with a shimmering portrayal of the manufacturer's logo. The gimmick that adds the most flash to the game is the use of three-dimensional drawing. The walls that you are building are perspective images of walls. They look great, but the fact that they appear in 3-D has no effect on the game play. Those watching the game being played have time to admire the walls as they form; the person playing the game is too busy to take much notice. Another nice touch is the use of a simulated voice that announces the winner of every round. Obviously, narration after the fact doesn't affect game play, either.

The game ends when the player loses three rounds. If the player wins three rounds, the game continues on to the next level. In this level the player and the computer each generate two walls. Win three more rounds and you get three walls to manage, and so on.

Again, the graphics are impressive. Each level is played on a different stage. Stages are stacked one atop another like a miser's coins. The game would be played no differently if the graphics were less impressive, however.

Super NovaTron is a reasonably decent game. The basic concept must be sound, or the game would not have lasted as long as it has and survived to be reincarnated yet again. This version of the old standard may not play any better than earlier versions, but then again it is available for the IBM. And the graphics are nice to look at—especially if you can find someone to play for you so you have a chance to watch. ☐

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Fun And Games With The TI 99/4A

Sherrie Van Tyle and Joe Devlin

Parsec

At last, an absorbing space shoot-'em-up for the TI 99/4A. In *Parsec* from Texas Instruments, you command a starship, armed with a laser, that is under attack by alien space craft.

Your ship patrols the skies of an alien planet; a clever melange of robots, jagged rocks, towers, rockets, and the TI logo scrolls right to left. Beneath the surface of the planet are: messages ("alien craft advancing"), a fuel gauge, your score, the number of ships remaining, and the lift number (level of vertical speed).

You have a total of five ships, one onscreen and four in reserve. Press the fire button to start; the joystick moves your ship vertically and horizontally. A message flashes that enemy ships are approaching. Press the fire button to unleash the laser. Don't fire continuously, however, because if the laser overheats, your ship explodes. If you need to refuel, press 1 to slow your craft and fly carefully into the refueling tunnel on the surface of the planet.

creative computing

SOFTWARE PROFILE

Name: Parsec

Type: Arcade style game

System: TI 99/4A

Format: Cartridge

Language: Assembly

Summary: Engaging space combat

Price: $39.95

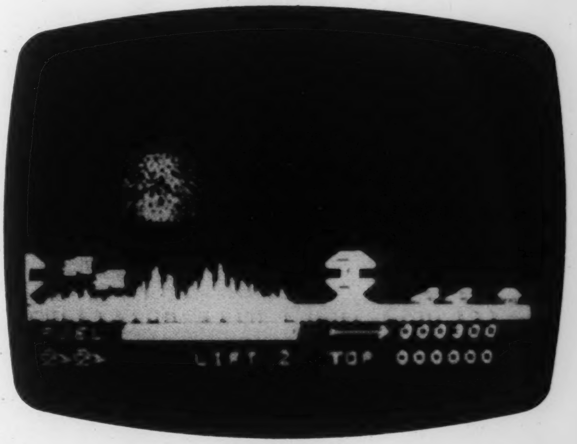
Manufacturer:
Texas Instruments, Inc.
Personal Computer Division
P.O. Box 53
Lubbock, TX 79408

The first wave of aliens, the swoopers, are aptly named; the two-winged space craft descend from the upper righthand corner of the screen and dive unpredictably at your ship. They aim to collide with you. You can move vertically to elude the aliens and blast them with the laser at the same time. If you move right, you will find yourself in the path of the swoopers. The best evasive moves are up and down.

While dodging the aliens and firing the laser, be careful not to crash into the ground. If you miss any swoopers, they fly faster, becoming difficult to fire upon without a deadly collision. If you are hit by an alien or your ship crashes into the planet, your replacement ship must destroy the remaining swoopers before you take on the next wave of aliens.

The urbites are particularly nasty to fight; they resemble flying electric plugs as they emerge from the right side of the screen, firing twin photon cannons. The urbites have the uncanny ability to track you vertically. Fire immediately or lose your ship. Your skirmishes with the four urbites are short and often fatal; so there is little danger of overheating the laser.

Parsec.



TI Games, continued...

If you demolish the urbites, you encounter the light triangular fighters. Like the swoopers, they plummet erratically to collide with you, but they move a bit faster.

If you survive the fighters, you may need to catch your breath. Press P (pause) to stop the game. The message "time warp activated" flashes. Press any key to resume play.

The next wave, the dramites, home in on your ship as the urbites do, tracking you vertically and firing a blaze of photon missiles. The dramites, however, move even faster and draw closer to your ship. As soon as the warning of their approach appears, start firing.

Your next opponents, the saucers, play a devilish space demolition derby. They try to ram your ship from behind; failing that, they circle and hit you from the front.

The last wave of aliens, the bynites, fire clusters of photon missiles. After you destroy the bynites, you bore through an asteroid belt with your laser. When you reach the end of the belt, the planet turns green and you reach the second level of play. In the second set, you must hit the alien spacecraft twice with your laser to demolish them. At the third level and beyond, you must strike the aliens three times with the laser. In the higher levels of play, the urbites pop up closer to your ship. The swoopers dive more rapidly.

Scoring is complicated; suffice it to say that aliens increase in point value as you progress within a set and at higher levels. At 5000, 15,000, and 25,000 points, you win another ship.

Use of the speech synthesizer is optional. The booklet that accompanies the game includes a scoring chart and is helpful in explaining the game.

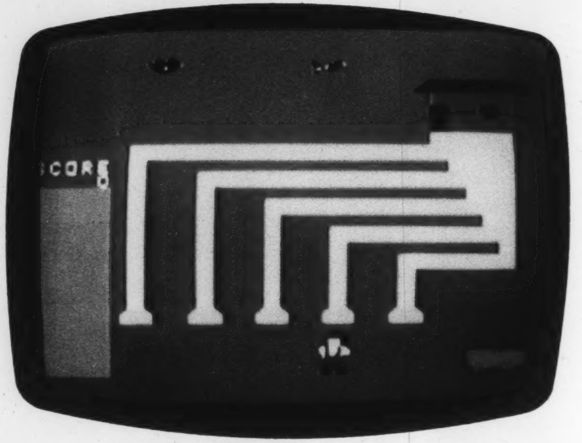
Parsec is a treat for TI users; it combines fast action, good graphics and enough difficulty for skilled players, though novices may be a bit intimidated at first. The game is so engaging that it eventually draws them in. An excellent game, it is well worth the price. —*SVT*

Henhouse

For a change of pace from interstellar combat, *Henhouse* from Funware provides a down-to-earth challenge: You are a farmer who must fend off poachers and wolves as you gather eggs to take to market.

The object is to collect the eggs as they drop from the henhouse and carry them to the truck while you shoot the two- and four-legged predators that stalk the henhouse. As the game begins, an egg comes out of the henhouse and drops into one of five chutes of graduated lengths.

Since you must wait until the chutes are full to collect the eggs, you can pick up your rifle from the lefthand corner of the screen and shoot poachers while you wait by pressing the fire button on the joystick.



Henhouse.

You also score points by shooting the birds that fly across the top of the screen. After the chutes fill with eggs, the pace quickens. You must put your rifle back in its spot on the left before you can catch the eggs. You press the fire button to gather them; and then deposit them in a truck parked in the lower righthand corner of the screen.

Watch the wolves and poachers, though; you must be ready to grab your rifle. If you miss a poacher on his way into the henhouse, you can shoot him on his return. If a wolf enters the henhouse, however, the game ends. The computer keeps track of the number of broken eggs on the left side of the screen.

Although the farmer moves faster than a poacher or wolf, it is a bit tricky to deliver a load of eggs and move back quickly enough to grab the rifle and catch the predator. The game also lags a bit at the start when the chutes are filling and you have more than enough time to aim and fire. Although the game may be played from the keyboard, a joystick is recommended.

creative computing
SOFTWARE PROFILE

Name: Henhouse
Type: Game
System: TI 99/4A, joystick recommended
Format: Cartridge
Language: Machine
Summary: Fun on the farm
Price: $44.95
Manufacturer:
Funware, Inc.
405 N. Bowser, Building A
Richardson, TX 75081

Henhouse inspires some split-second decisions because the eggs drop at random into the chutes. This is fun for those who like risks, frustrating for players who like to plot strategy. The game is often quick-paced and funny especially as you frantically race left and right to keep up with dropping eggs and poachers.

We do feel, however, that the $44.95 price is too steep to make *Henhouse* a best buy. —*SVT*

Anteater

Have you ever watched ants carve a labyrinth in an ant farm? In *Anteater* from Romox, you become one of those ants, pursued by a voracious anteater that chases you through tunnels that you burrow in the sand.

Your objective is to move the ant from the colony to the basket of food without being consumed by the anteater. You have three ants to carry four cubes of food to the nest, creating tunnels as you travel.

To reach the food, you must break the surface; when the eater spots your antennae poking around the food, the chase is on. Fortunately, the eater can pursue you only along the tunnels you have carved. To repel or destroy the relentless eater, press the fire button to drop an egg bomb. The bomb hovers for several seconds, flashes as it blocks the eater or explodes as it kills him. You also can tunnel directly under one of six rocks causing them to fall and crush your pursuer. Don't linger under a rock, however; it can smash you.

As the game begins, you are in the nest at the lower righthand corner of the

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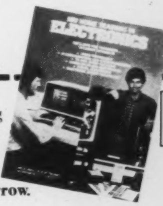

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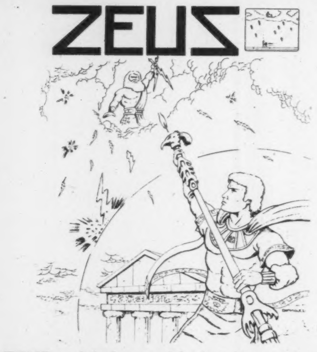

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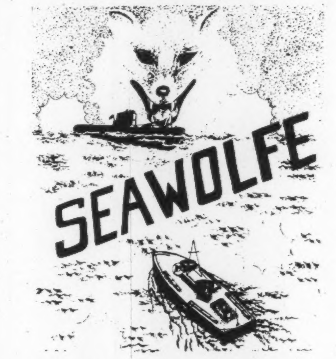

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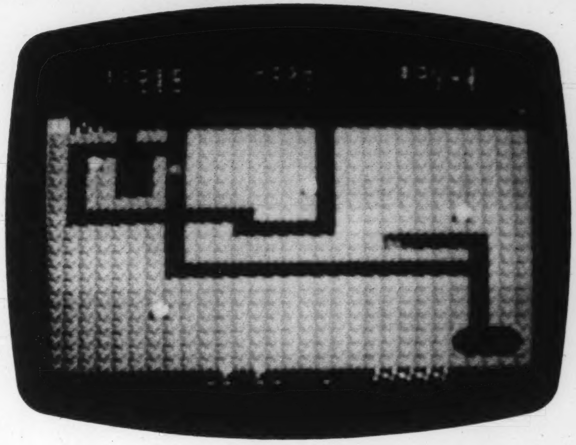

Anteater.

TUNNELS
OF
DOOM
© 1982 TEXAS INSTRUMENTS

Tunnels of Doom.

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SOFTWARE PROFILE

Name: Anteater

Type: Game

System: TI 99/4A, Atari 400, 800, and 1200, Vic 20, Commodore 64

Format: Cartridge, joystick recommended

Language: Assembly

Summary: An engaging maze game

Price: $39.95

Manufacturer:
Romox, Inc.
476 Vandell Way
Campbell, CA 95008

screen. The food basket is in the upper lefthand corner; the anteater appears at the upper right corner. In the first set, there is one eater. It moves fairly slowly, so you have plenty of time to carve a shortcut between the food and the colony to gather the cubes quickly. If you retrieve the food without losing all your ants, you advance to the second set. If you keep three ants alive—an easy task at level 1—you gain an extra ant.

In the second set, you face two eaters and the pace quickens. At level 3 and up, three eaters chase you; the game moves faster with each new set. If the early sets are too easy, you can select a level of difficulty up to 9 by pressing numbers 2 to 9 on the keyboard before you press the fire button to start the game.

At level 9, the anteaters hunt you mercilessly. Your food gathering and tunneling is more feverish than strategic as you try to elude the frenetic eaters. If you are tempted to cut a tunnel and rest a bit, try carving a short vertical tunnel and drop a bomb at the entrance when you spot an eater.

The five bombs are effective for only a few seconds; wait until the eater is close to you or backtrack a bit to drop the bomb. Keep your tunnels narrow—if the tunnels are too wide, the eaters sneak by the bombs. Though you move quicker through tunnels than through sand, you win points for each block of sand through which you tunnel.

Each two seconds of play subtracts five points from the bonus period. If you gather all the cubes at level 9, you advance to level 10. For each set you complete, you score 100 points. An anteater killed by a rock is worth 100 points; an eater destroyed by an egg bomb is 200.

Press AID for the rules of the game. The magenta screen and the crowded letters make them difficult to read, however. The tune that accompanies the game is catchy, but grows wearisome. Press N to stop the music.

We congratulate Romox on an excellent game. The levels of play increase evenly in difficulty; young children and novice players can manage the early sets, sharpen their skills, and improve, while the higher levels challenge the experts.

You may select one or two players before the game starts. *—SVT*

Tunnels of Doom

Tunnels of Doom from Texas Instruments is an intricate quest game that challenges your memory and judgment rather than your reflexes. If you like details, the game will delight you with its array of armament for players, the choices of moves, and the variety of treasures.

If you habitually toss aside the instruction book in a game package, resist the urge this time. In fact, set aside an afternoon in which to play the game.

Two games are included: Quest of the King and Pennies and Prizes, a simpler version of Quest, designed for children. In Quest, you search the dungeon of a castle for the king, who is being held captive by monsters. In addition, you must find the king's rainbow orb of power before it is destroyed or time runs out.

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SOFTWARE PROFILE

Name: Tunnels of Doom

Type: Quest game

System: TI 99/4A

Format: Cartridge and cassette or disk

Language: Assembly

Summary: Complex and fascinating

Price: $59.95

Manufacturer:
Texas Instruments, Inc.
Personal Computer Division
P.O. Box 53
Lubbock, TX 79408

Your party of rescuers roams the dungeon, fighting imps, rats, and dark slime. You gather treasures such as gold pieces and magic scrolls from vaults and chests.

A few minutes spent studying the key functions in the instruction booklet may save your life. The goblins that lurk in the corridors strike without warning, so it helps to know how to trade weapons or negotiate with (bribe) the monsters.

Think of the knights in the Middle Ages girding for battle: You equip your warriors with crossbows, quarrels, shields, battle rations, and healing by purchasing these items at a general store. Reserve some of your gold pieces to negotiate with the monsters rather than endure a bloody battle. Before you embark, you choose one of three levels of difficulty, the number of floors in the dungeon (up to 10), and the number of rescuers (up to four).

TI Games, continued...

Each player has a distinct personality. The rogue, for example, can sense a trap hidden in a vault or treasure chest. A wizard is equipped with a magic scroll to use in combat.

At first, moving from room to room is tricky. One of the treasures is a map, a floor plan of the dungeon. You press M to see the rooms your party has explored in black and the rooms still to be searched in blue. The colors look too similar on-screen, however.

The halls are marked north, south, east, and west, but the screen shifts to an overhead view when a monster confronts you or when you enter a room. In rooms with several objects, it is a bit difficult to distinguish between monsters and treasures until you are attacked by one of them.

If you are badly wounded, you retire from combat until you are healed by rations, a magic item, or "healing" you purchased at the store. If the entire party is disabled, the game ends. As you find enough gold pieces, you may return to the store for supplies. However, the store is on a different floor, so it is quite a trek for your party if you have reached a remote corner and need equipment.

Quest is intriguing; it is apt to hold you spellbound for hours. The instructions are specific and straightforward. Because *Tunnels of Doom* contains two games for the price, we rate it a best buy.—*SVT*

Princess and Frog

It's an old tale but one worth retelling. A tale of a tiny green frog who lusts after the kiss of a beautiful princess. But the world can be cruel to a little frog. Obstacles never fail to appear in the path of love—in this case jousting stickmen, alligators, snakes, and the dreaded time limit. As Kermit the Frog put it so well years ago, "It's not easy being green."

Princess and Frog is a fairy tale version of Frogger. It is a one player game that can be played with either joystick or keyboard cursor controls. The object of the game is to hop frogs across field and stream to the ivory tower where princesses' lips wait.

The first obstacle encountered by our green skinned Romeo is a field of jousting stickmen. There are four rows of jousters—two rows riding to the left, two rows riding to the right.

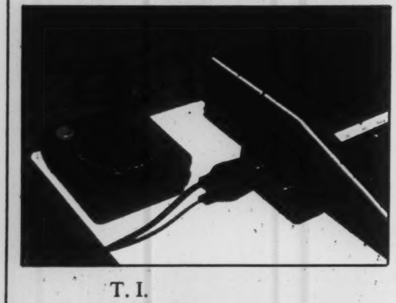
Hopping forward into the field brings our amphibian closer to the castle but places him in the path of rapidly ap-

creative computing
SOFTWARE PROFILE

Name: Princess and Frog
Type: Arcade squish-'em-down
System: TI 99/4A
Format: Cartridge
Language: Assembly language
Summary: A hopping good time
Price: $44.95
Manufacturer:
Romox, Inc.
476 Vandell Way
Campbell, CA 95008

Switch-Type (Atari) Joysticks For The TI 99/4A

Gary Cook

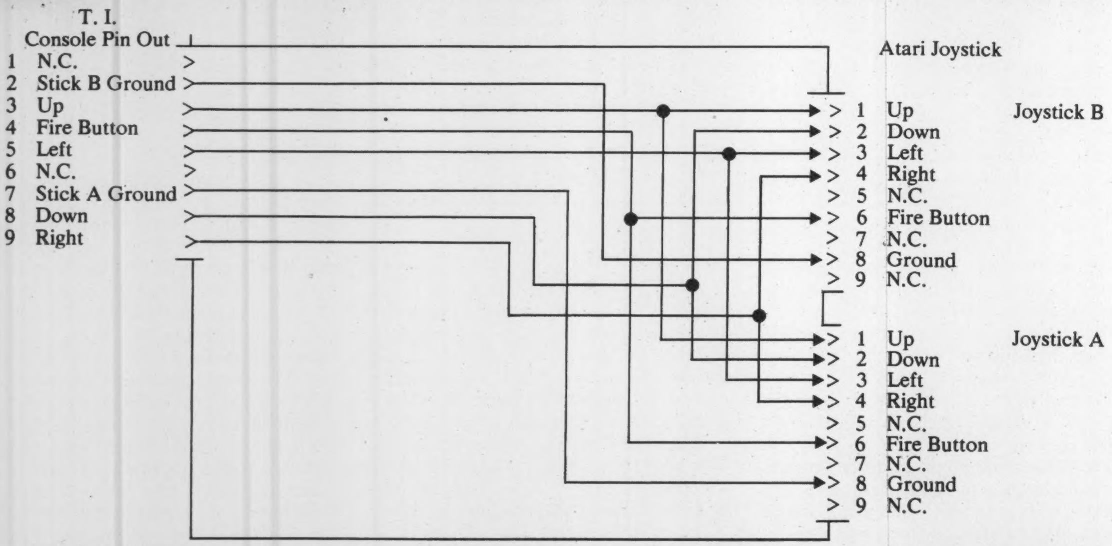


Have you been zapped, skewered, or gobbled while playing video games because your TI joystick failed to respond?

Many TI users are dissatisfied with the TI joystick for maze games and Frogger-type games. For these games, a switch-type (Atari) joystick offers much greater control.

I solved this problem with three 9-pin D connectors (two male and one female), a small box, a length of cable, and about an hour's worth of work.

To make an Atari joystick interface for your TI 99/4A just solder the wires as indicated in the wiring diagram. The female connector is the input to the TI computer and the two male connectors are the receptacles for other joysticks. The connectors may be mounted on a small plastic or metal box. Alternatively, you can use two short lengths of 6-conductor cable between the single female connector and two male connectors.



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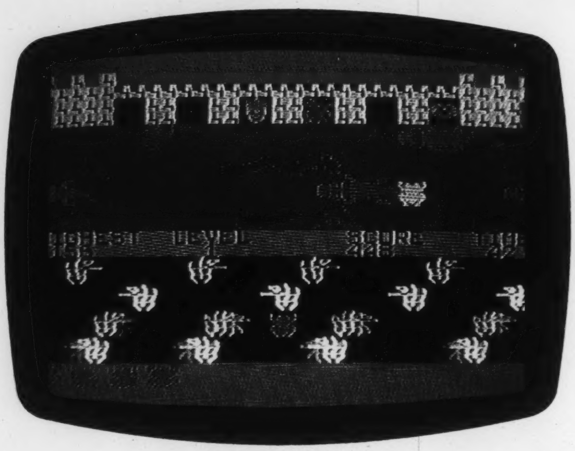

Princess and Frog.

proaching lances and galloping hooves. To avoid the point of the lance, the frog must hop to the left or right ahead of the approaching danger or forward or back when an opening is available.

Having survived all four rows of galloping horses, the frog reaches a safe area where he can rest his webbed feet. But he can't rest too long, for the clock on the righthand side of the screen counts down the seconds left of the original minute granted him to reach the tower. Four more frogs wait in reserve in case the lance skewers the first frog.

The next obstacle is a moat filled with alligators and snakes. To get across the moat our frog must leap onto the backs of the beasts as they swim past. One false leap and he falls in the water, and it's the next frog's turn. To make matters worse alligators periodically submerge, dragging bare-back riding frogs down with him.

The alligators are not all bad, however, some carry pretty white frogs on their backs. The damsel frogs love to be leaped on, rewarding such boldness with extra points.

There are six rooms in the tower. To get into a room the frog must leap from the back of a passing alligator. Should his timing be off, he will miss the room, hit the tower wall; and slide into the moat to be eaten by one of the passing beasts.

The most desirable room is the one in which the princess is waiting. She is impatient, however, and moves from room to room at random intervals. Each frog can find a princess if his timing is just right.

When a frog reaches one of the rooms, an extra frog appears to take his chance running the gauntlet to his love. When all six rooms of the tower are occupied, a new tower with a fresh battery of frogs appears, and play begins anew at an increased level of difficulty.

The graphics used in the game are colorful, and the frog-hopping sounds are appropriately bubbly. But the funeral concerto for the unsuccessful frogs is long and a bit too gleeful.

Princess and Frog may not be terribly innovative, but it is well done. Where else can you watch a fairy tale come true for the price of a game cassette? *—JD* ☐

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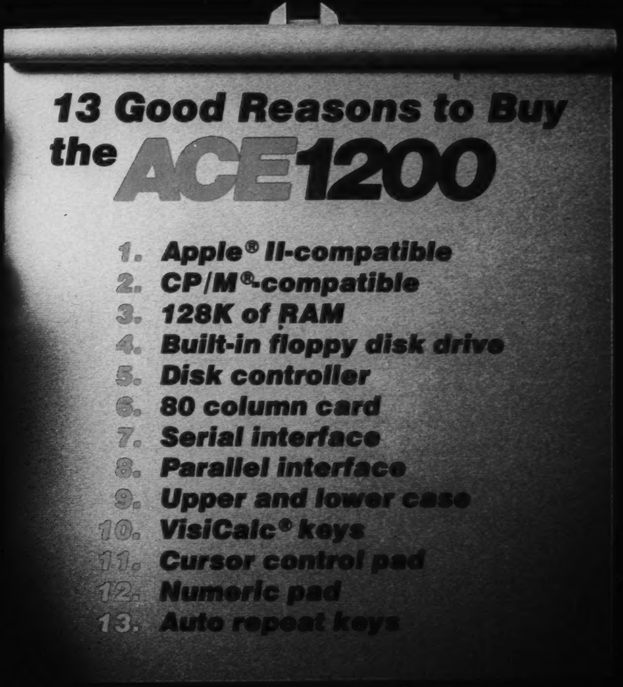

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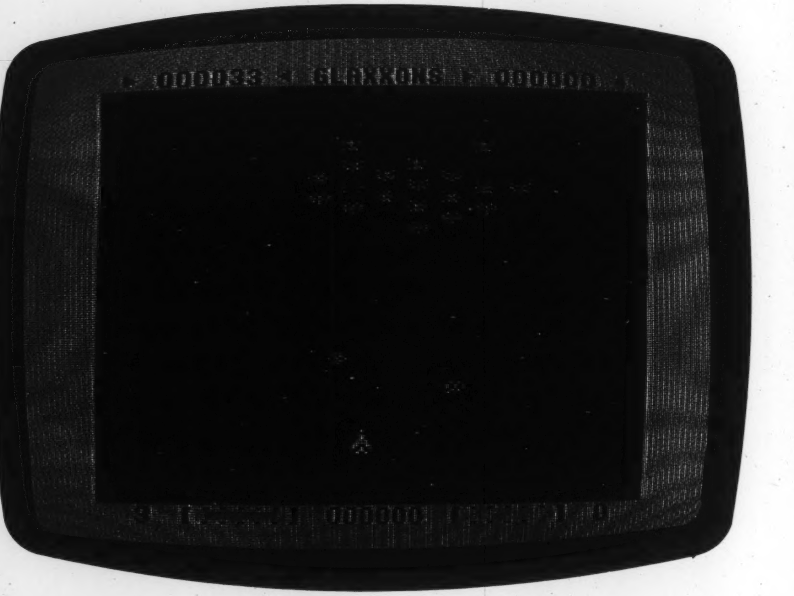
Glaxxons

Glaxxons is a hi-res game for one or two players, each armed with a joystick and a quick trigger finger. Loosely based on Galaxian, the arcade game from Midway, *Glaxxons* pits the players against swirling hordes of space attackers. As a large convoy of invaders slides back and forth, crazed aliens break out of formation and swoop down at the player's ship. While trying to avoid collisions with these rambunctious pests, you must also attempt to pick off the shots fired by the aliens remaining in the squadron. One feature that sets it apart from other Galaxian clones is that in *Glaxxons*, the player can move his ship up and down in addition to left and right. This opens up a whole new dimension in the gameplay.

The response to the joystick controls is excellent. I find that playing *Glaxxons* with an Atari switch-activated joystick is far better than playing with a Radio Shack potentiometer stick. (Instructions on how to convert your old Atari joystick for use with the Color Computer are on page 240 in the May issue of *Creative Computing*.)

Glaxxons makes extensive use of the hi-res graphics capabilities of the Color Computer. There are four different types of aliens, each one depicted in colorful detail. The animation of the invaders is very well done. As they swoop down to attack your ship, they swirl, twist, and dance in the skies. These movements are designed to confuse you, and often lead to your destruction.



If you are the kind of person who finds arcade games difficult to handle, be wary of this one. "*Glaxxons* appeals to people who enjoy fast, exciting games," comments Ron Krebs, president of Mark Data Products. "It's not for the timid."

You set the speed of the game, and also choose the difficulty level. These options make *Glaxxons* suitable for a wide range of game-playing enthusiasts. *Glaxxons* also has pause and abort game features.

When compared to some other games, *Glaxxons* falls a little short in the sound effects department. Nonetheless, it is one of the best buys in the Color Computer software market. I rank it in the top ten percent of the games now available. No die-hard Galaxian fan can be without *Glaxxons*.

Programs similar to Glaxxons *for other computer systems.*

System	Name of Game	Manufacturer
Atari 400/800/1200	Galactic Chase	Spectrum Computers
Apple II/II+	Alien Typhoon	Broderbund
TRS-80 Model I/III	Galaxy Invasion	Big Five

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SOFTWARE PROFILE

Name: Glaxxons

Type: Arcade

System: 16K TRS-80 Color Computer with joysticks

Format: Tape/disk

Language: Assembly

Summary: Similar to Galaxian, but with an exciting twist

Price: $24.95

Manufacturer:
Mark Data Products
23802 Barquilla
Mission Viejo, CA 92691
(714) 768-1551

Zaxxon

It was early in the morning when the postman arrived here at our Morris Plains editorial office. While looking through my mail, I noticed a small cardboard box from DataSoft. After casually peeling off the masking tape and opening the package, I discovered a copy of *Zaxxon* for the Color Computer. Little did I realize that within this unassuming box was a product of such quality and excitement that the better part of an entire day would be devoted to playing the game.

Until recently, the licensing of coin-op video games has been very limited in the computer field. We are just beginning to see some of the major software houses buying up the rights to produce home versions of the popular arcade games. *Zaxxon*, from DataSoft, is a member of this new breed of computer games.

The object of *Zaxxon* is to shoot and destroy a powerful enemy robot. To meet this robot, you must first pilot your fighter plane through a floating space fortress, battle up to 20 enemy jets in outer space, and then survive a flight through yet another fortress bristling with missile silos and enemy bunkers. It is no easy task.

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SOFTWARE PROFILE

Name: Zaxxon

Author: Steve Bjork

Type: Arcade

System: 32K TRS-80 Color Computer

Format: Tape/disk

Language: Assembly

Summary: The best, and only licensed Zaxxon for the Color Computer

Price: $39.95

Manufacturer:
DataSoft Inc.
9421 Winnetka Ave.
Chatsworth, CA 91311

Zaxxon is designed for one or two people to play one at a time. Each player must use a separate joystick; a keyboard option is not offered. Pushing the stick forward causes your plane to dive rapidly, and pulling back makes the fighter climb. Many players feel that these "reverse" controls are strange, but that is exactly how most real airplanes react to the movement of a flight control stick. I find that playing with an Atari-style stick is much better than using the Radio Shack joysticks. The Tandy sticks seem to have large dead zones which make delicate maneuvers difficult to perform. As always, this is a personal preference and you should experiment to determine which type of stick you feel most comfortable using.

The thing that sets *Zaxxon* apart from all other arcade games is the unique three-dimensional view of the action. The innovative graphics are the selling point of both the coin-op and computer versions of Zaxxon. I didn't think that it was possible, but the masters at DataSoft have made the Color Computer adaptation one of the best versions of Zaxxon for any computer or home game system. There is only one way to describe the graphics of *Zaxxon*: absolutely superlative.

As your fighter gracefully glides into the first fortress, the enemy bunkers come to life. Shooting rockets at your ship, these red pillboxes present problems if you remain close to the battlefield. The stationary enemy planes on the ground also fire at you. Use the gauge on the left side of your screen, as well as the shadow of your plane, to judge your altitude. Beware of the small black holes scattered along the surface; these are the openings of missile silos. The large circular tanks located in the fortress contain valuable fuel and shooting them replenishes your supply. All of these objects can be destroyed with a single shot, but you must avoid colliding with them. Also found in the fortress are radar dishes and force fields. The dishes are to be blown up, but you must either carefully sneak under or climb over the force fields. After weaving your way through the first fortress, you enter space.

In outer space, you must dispose of a series of enemy fighter planes. If you destroy a complete squadron (20 planes)

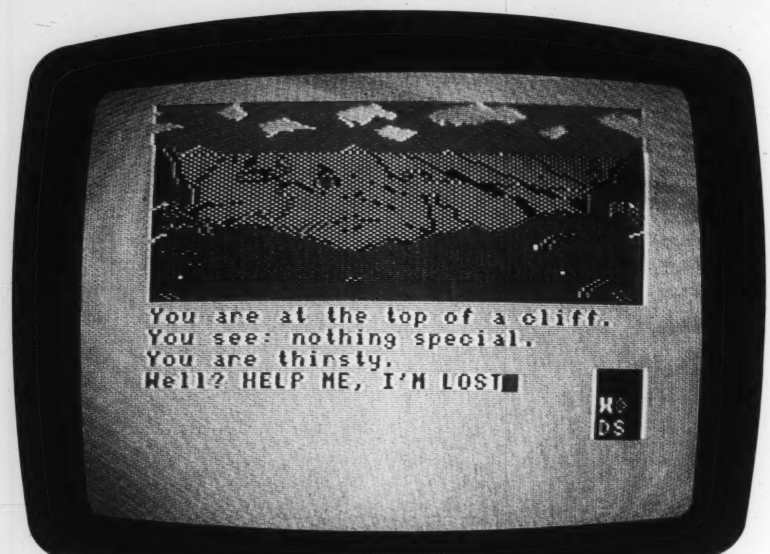
before the second fortress appears, you earn bonus points. As you wrestle with the joystick, the planes diminish in size as they retreat into the distance and grow as they make daring attacks. After a predetermined length of time, the second fortress scrolls into view. This floating battlefield is much like the first, except that the enemy robot resides at the far end of this one. To destroy the robot, you must manage six direct hits on its homing missile. Otherwise the missile is launched with you as its target!

While the graphics are what really make this game excellent, the fine sound effects should not be overlooked. It may be true that "in space no one can hear you scream," but they certainly can hear you explode. Whenever you lose a ship, you hear a dynamic blast from the speaker. The other sound effects, such as surface explosions and the firing of your rockets, seem deliberately muffled.

If you are fairly good at the coin-op game, the Color Computer version of Zaxxon may prove somewhat easy. Those who are familiar with it should be happy to note that many of the editors here have commented that the Color Computer adaptation looks and plays better than the ColecoVision *Zaxxon*. Steve Bjork, the person who programmed the Color Computer version is in an awkward position: what can he do for an encore?

One thing that may keep *Zaxxon* out of your reach is its rather lofty price tag. If $39.95 seems like a great deal of money, just think how much the licensing agreement must have cost. Unless you make it worth their while by buying the products, Color Computer software companies will probably not continue to produce standard-setting games such as *Zaxxon*.

Sands of Egypt



```
You are at the top of a cliff.
You see: nothing special.
You are thirsty.
Well? HELP ME, I'M LOST█
```

creative computing

SOFTWARE PROFILE

Name: The Sands of Egypt

Type: Animated adventure

System: 16K TRS-80 Color Computer with Extended Color Basic

Format: Disk

Language: Basic with machine language.

Summary: One of the finest adventures available for the Color Computer.

Price: $29.95

Manufacturer:
Radio Shack
1800 One Tandy Center
Fort Worth, TX 76102

It has been a long time since I've sat down at my Color Computer to indulge in an adventure. After playing Radio Shack's *Sands of Egypt*, I now remember why I shy away from fantasy games: they are just too addicting.

Sands of Egypt is a classic adventure in which you play the part of a British explorer who is searching the Sahara Desert for the treasure of the tomb of Ra. While this may not seem like a terribly exciting scenario, it is the animated graphics that make *Sands of Egypt* a marvelous sight to behold. Instead of relying strictly on your imagination and interpretation of simple text descriptions, a hi-res picture of your immediate surroundings is constantly displayed in the top portion of the computer screen.

Since *Sands of Egypt* requires only 16K of memory, it is easy to understand why the program must access the disk occasionally. The drive remains spinning longer than usual so that it must not recalibrate every time you request an inventory or major scenery change. The access time is very quick and does not interrupt the flow of the game. And there is no need to worry about wearing out your disk; Radio Shack provides two copy-protected disks with each package, and also has a limited 30-day warranty.

When the adventure begins, you are standing in the middle of the desert with only a compass to aid you. Located in the lower righthand corner of the screen, the compass displays the directions in which you may move from any given location. As you travel through the desert giving one- or two-word commands, the screen display scrolls in the appropriate direction. This is the true beauty of this game. While other programs claim to be graphics-oriented, few are actually animated as is *Sands of Egypt*.

Even as the computer waits for you to input your next move, the billowing white clouds in the sky above slowly drift by. But do not let this fool you into believing that *Sands of Egypt* is a real-time adventure. You may take as much time as you want to decide on a course of action. Each move you make is considered a game-turn, and the object is to complete the adventure in as few turns as possible.

In comparison with other adventures, *Sands of Egypt* does seem a bit shallow. While others may require deep thought and cunning wit to solve, *Sands of Egypt* relies strongly on perseverance and patience. Some of the solutions to problems are not entirely logical, and the list of commands is rather limited. I find it frustrating when I know exactly what to do, but just can't seem to find the exact word that the computer program wants. Since the vocabulary is small and the HELP command is not very helpful, novice adventure players may find *Sands of Egypt* difficult.

A warning to all fellow adventurers: do not buy *Sands of Egypt* if you expect to walk right through it. The very nature of the desert prevents that. One sand dune looks just like the next sand dune, and returning north after going south does not always bring you back to where you started. The documentation suggests making a map to help you along your way. I suggest that you drop items to identify certain locations. Regardless of the tricks you use, *Sands of Egypt* is sure to present a reasonable challenge to even the most hardened adventure game player. ☐

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CIRCLE 271 ON READER SERVICE CARD

Eight Great Games For The Vic 20

David Busch

Software packages like the ones described here are among the reasons that more than a million Vic-20s have been sold in the past two years. Sold at discounts in the $80 price range, the Vic-20 offers more game machine than dedicated game-only video units, and more computer than the add-on keyboards for the Atari VCS and other systems. It is also priced lower than either.

Choplifter

The scenario of *Choplifter* is reminiscent of the ill-fated Iranian hostage rescue. Your helicopter is charged with the mission of rescuing stranded hostages and returning them to the base safely. Armed with both missiles and bombs, the chopper, controlled by the joystick, must land near the hostages, wait for them to climb safely aboard and then return to safety, avoiding hostile fire from enemy tanks, planes, and killer satellites.

The first few missions are easy. Hostages run loose on the plain, which is rendered in a perspective view, and the helicopter need only land near them to draw their attention. The status line at the top of the screen tells the player how many hostages have climbed aboard the chopper (it can hold a maximum of 16 at a time), how many have been returned to the base so far, and how many have been killed.

The player is given three choppers and a maximum of 64 hostages to be either rescued or killed. Landing on top of a hostage spells certain death for him, and the enemy tanks usually knock off a few while firing at the chopper. If the helicopter is destroyed by tank, satellite, or bomber, all aboard are added to the "dead" column.

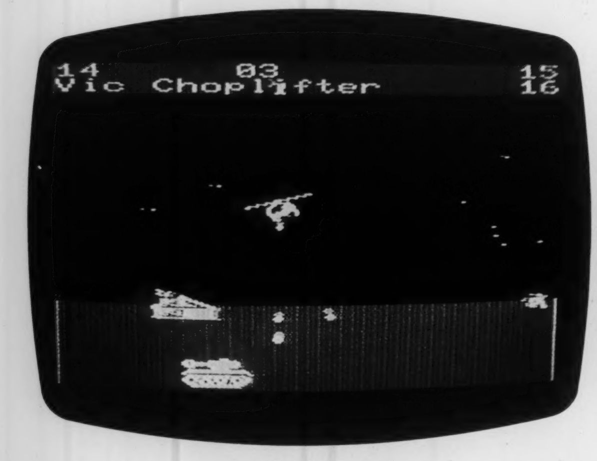
creative computing
SOFTWARE PROFILE
Name: Choplifter
Type: Game
System: 5K Vic-20
Format: ROM cartridge
Language: Machine language
Summary: Chopper rescue of hostages
Price: $29.95
Manufacturer:
Creative Software
210 San Antonio Circle
Mountain View, CA 94040

After the first 16 are rescued, the remainder of the hostages must be freed from prison camp, embassy-type buildings, chiefly by landing on the building. After the first couple rounds, the bombers and killer satellites appear, making the rescue even more difficult. Even so, I found it fairly easy to achieve the maximum score. After that, the game has little challenge, except, perhaps, to try to cut down the time needed to rescue all 64 hostages.

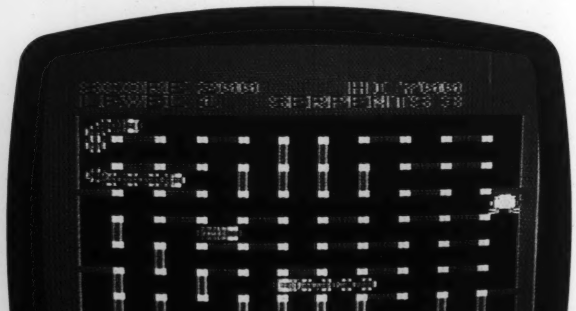
The graphics are very good, especially the 3-D effect of the perspective view. I did find it a bit unnerving to have the "closer" stars in the sky appear to scroll faster than those in the "background." Incidentally, I found the Apple II version of *Choplifter* which has higher resolution graphics, to be a bit more difficult to play. I never did get a perfect score on that one.

Serpentine

Serpentine is another popular, multi-system game, a combination of Pac-Man style maze games and the lengthening snake challenges. In this game, your snake competes with enemy snakes for living space and food in a maze. You move your snake through the maze with the joystick, eating frogs, other snakes' eggs,

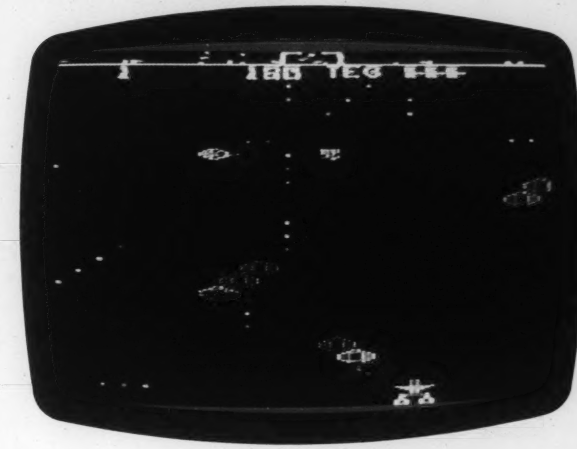


Choplifter

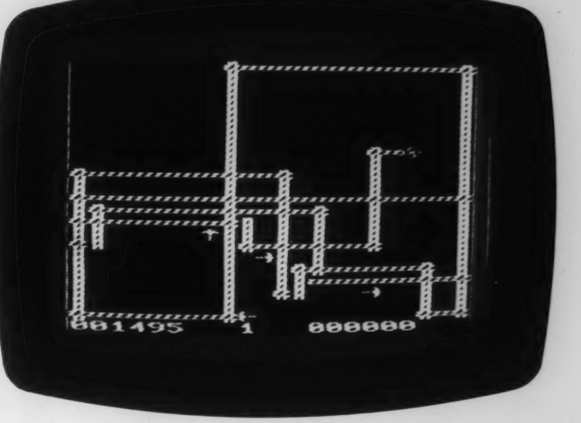


Serpentine

David Busch, 5217 C Cline Rd., Kent OH 44240.



Astroblitz



Shark Trap

and portions of the other snakes themselves along the way.

As long as your snake is shorter than the enemy serpents, it must be content to sneak up behind and nip segments off the others' tails. It is also possible to lie in wait in an alcove and bite the middle of an enemy reptile as it passes. Attacking head-on results in your snake being eaten.

Each meal causes a snake to grow in segments, and if yours does exceed the length of a rival, the other snake turns white and can then be attacked head-on. Snakes of a certain length lay eggs, which, if not eaten, hatch into more snakes.

Killing all three enemy snakes in a round ends the round and advances your snake to the next screen. Points are amassed along the way; eating a frog nets 500 points and one new segment. Eating a spotted egg is worth 150 points times the level number plus one segment. A tail segment counts for 150 points in levels one and two and increases by 100 points on each higher level. The head of an enemy snake is worth 200 points in levels one and two and increases by 200 points on each higher level.

One nice touch in this game is that pressing the fire button activates a pause feature. You can go have lunch and come back to free your snakes from stasis.

The music that accompanies the action varies from fanfares to Indian snake charmer tunes and becomes rather monotonous after a while. If that, or the constant hissing of the snakes gets on your nerves, resort to the volume control on your TV set or monitor and tune them out.

This game should appeal to accomplished gamers more than *Choplifter*, because, at least in the Vic-20 incarnation, achieving high scores is more difficult and scoring is open-ended.

Astroblitz

Just what we needed: another version of Defender. The graphics in this implementation are multi-colored, but the ships and objects somewhat gross in size, given the proportions of the television screen. If you are far-sighted and looking for a Defender game that can be played without glasses, this may be your choice. The l-a-r-g-e ship occupies more than its share of screen, and the scanner extends along the whole top.

creative computing
SOFTWARE PROFILE

Name: Serpentine
Type: Game
System: 5K Vic-20
Format: ROM cartridge
Language: Machine language
Summary: Snake-chase
Price: $29.95
Manufacturer:
Creative Software
210 San Antonio Circle
Mountain View, CA 94040

creative computing
SOFTWARE PROFILE

Name: Astroblitz
Type: Game
System: 5K Vic-20
Format: ROM cartridge
Language: Machine language
Summary: Defender-style game.
Price: $29.95
Manufacturer:
Creative Software
210 San Antonio Circle
Mountain View, CA 94040

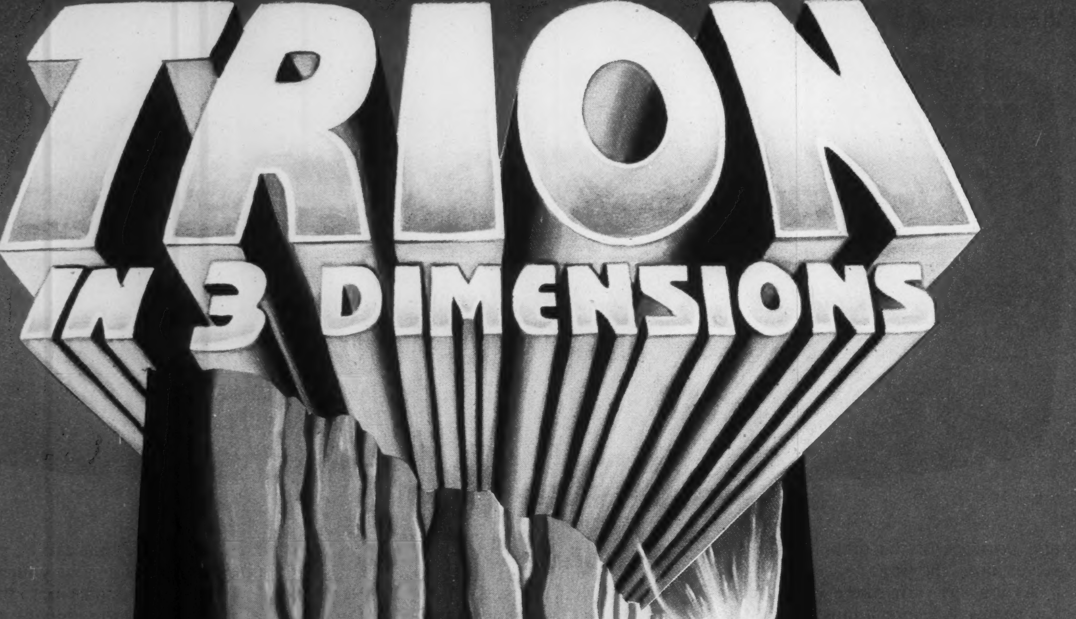
Actually *Astroblitz* is no snap to play. Oncoming enemy fire is vicious and can come from saucers, gun towers (which are worth 150 points when destroyed), and other menaces. Joystick movement of the ship is precise, but there is no provision for hyperspace, smart bombs, or other handy tools to even the odds a bit.

However, you do get five ships. When death seems to occur instantly and you feel as though you are going through lives faster than acts at the US Festival, the large backlog of ships in reserve is quite welcome. Taken as a whole, *Astroblitz* is a decent version of Defender. You get to enter your initials at the end if you better the top scores, and the disappearance and emergence of the opening screen from an apparent black hole is something to watch.

Broderbund is one of the leading software houses marketing games today, and their two Vic-20 diversions, *Shark Trap* and *Martian Raider*, are worthy banner bearers for the line. Melbourne House is a new name in the United States, but has been selling Vic-20 games overseas for some time. The Broderbund games represent Vic-20 game technology at its apex; the Melbourne games show what can be done inexpensively, and offer a bargain of sorts to those who want to expand their game library quickly and at minimal cost.

Shark Trap

There is no doubt about it, *Shark Trap* is the most addictive computer game I have played in ages. I found myself bat-



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DESIGNED BY GREG YOUNG. FOR ALL ATARI COMPUTERS AND THE COMMODORE 64.

CIRCLE 181 ON READER SERVICE CARD

tling the sharks for hours, promising myself one more play to better a previous high score. *Shark Trap* is probably the most fun you can have for less than 25 cents a game.

The player moves a cursor about the screen, laying "nets" that both isolate the sharks and lay claim to larger and larger portions of the territory, Qix-style. Once a given percentage of the screen has been covered with nets (this seems to be about 85%; the instructions don't give a clue), the screen clears and the next difficulty level is reached.

In laying the nets, the player must avoid four rather stupid sharks, which attack if you get too close. The sharks seem to have a poor sense of smell, because they don't present much of a danger at first, unless you are very, very careless. A good strategy is to confine the sharks in a small area and then lay nets in the other half.

The game would be simple, except for one thing: the sharks sometimes eat the nets and escape. Then it is necessary to rope them in again. To complicate things, two octopi are deposited on the screen each time a level is completed. While the eight-armed ones do not roam about, they are deadly to touch. Because the net-layer moves so quickly, inertia alone can carry you into an octopus if you move the joystick without due caution.

You get three lives in which to accumulate points by filling unoccupied screen with net. You can backtrack over existing net, but you earn no additional points while doing so. To make things really interesting, the sharks speed up their movement to Warp 2 when you reach 10,000 points. Your remaining net-layers become sharkbait quite quickly at that speed.

The sharks can't be killed, just temporarily neutralized. But, sometimes, a shark will attack and eat half an octopus. The other half continues to be as deadly as before. The animation (moving sharks, tentacle-waving octopi) is very cute in this game, but the sailor's hornpipe theme song becomes tiring very quickly.

creative computing

SOFTWARE PROFILE

Name: Shark Trap
Type: Game
System: 5K Vic-20
Format: Cassette
Language: Machine language
Summary: Net points and sharks
Price: $19.95
Manufacturer:
Broderbund Software
1938 Fourth St.
San Rafael, CA 94901

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SOFTWARE PROFILE

Name: Martian Raider
Type: Game
System: 5K Vic-20
Format: Cassette
Language: Machine language
Summary: Defender-style game.
Price: $19.95
Manufacturer:
Broderbund Software
1938 Fourth St.
San Rafael, CA 94901

Martian Raider

Martian Raider is an excellent Defender-style pastime that, like *Shark Trap*, can be played with either joysticks or by using the keyboard. Keyboard commands provide an added measure of flexibility. Since a joystick has only one fire button, pressing it releases both bombs and photon torpedoes simultaneously—a clear waste of ammunition.

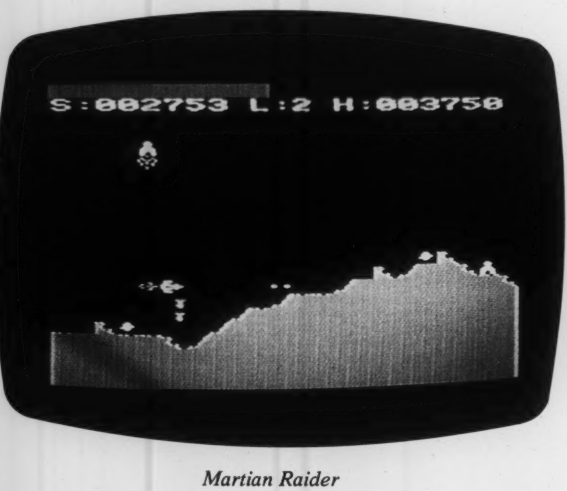
Wasting ammunition happens to be the goal of the game, however, as green Martian ammo dumps are a primary target for the attacking craft. You get only three ships, but you accumulate points for both elapsed seconds and objects hit.

Enemy attackers are varied and challenging. Ground-based ships may lift off to get you and at each successive level, new menaces, such as meteors, appear to make things really hairy. If you like scrolling attack games, give this one a try. It is a pretty good effort.

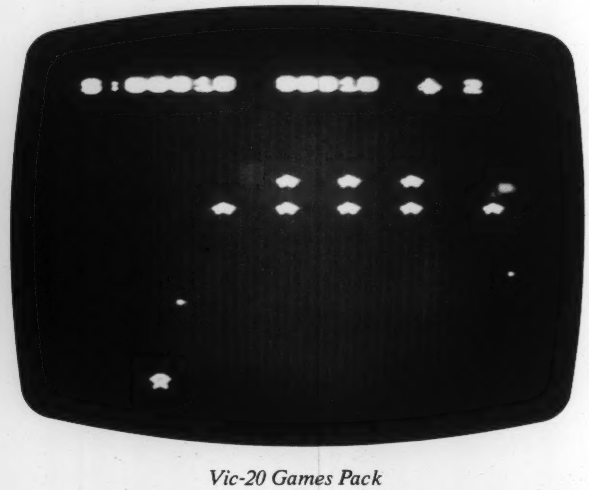
Vic-20 Games Pack

Do you rarely rise above street level in Crazy Climber or Donkey Kong? Is your Pac-Man undernourished from lack of energizer dots? If you need to practice your arcade skills before showing your face again, try this *Vic Games Pack* from Melbourne House. None of the games will threaten the most inept arcader, and the price is less than a week of playing Dig Dug.

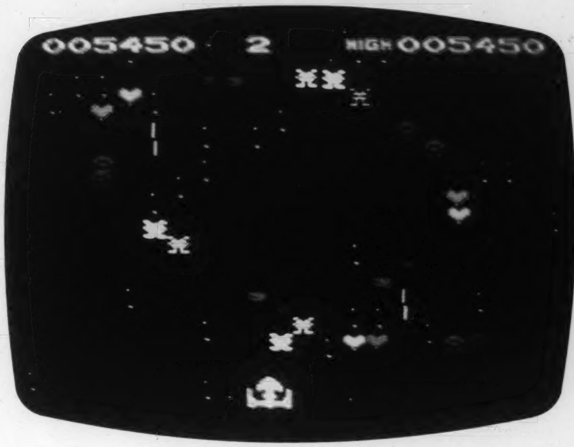
The five programs are me-too implementations of Galaxian, Space Invaders, Defender, Asteroids, and one apparent original. Written in either Basic or a combination of Basic and machine language, most are really too slow to be of much challenge to the dedicated game player. They do give you a chance to add five games for the price of one.



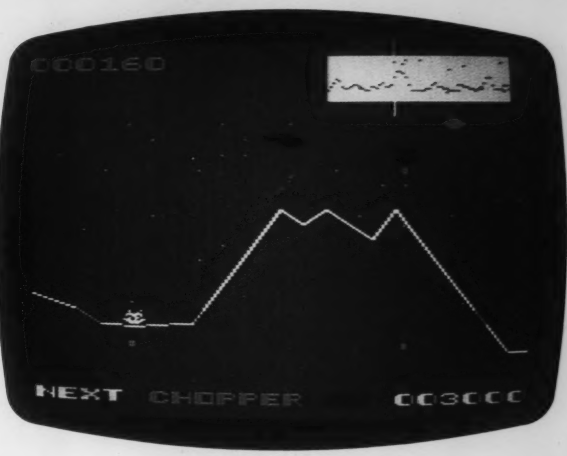
Martian Raider



Vic-20 Games Pack



Swarm



Sidewinder

creative computing
SOFTWARE PROFILE

Name: Vic-20 Games Pack

Type: Game Assortment

System: 5K Vic-20

Format: Cassette

Language: Machine language & Basic

Summary: Versions of Galaxians, Space Invaders, Defender, Asteroids, and one original

Price: $14.95

Manufacturer:
Melbourne House
347 Reedwood Dr.
Nashville, TN 37217

Alien Blitz, for example, is the world's easiest Galaxian clone. While the action is fast enough, the enemy has incredibly poor aim. In fact, even deliberate suicide can be difficult. You start with either three or four bases; but I was never able to use them all up to find out for sure.

Invaders shows you what it would be like to play arcade games on a really busy time sharing system. When you shoot a missile at the ponderously advancing alien horde, it flies unerringly toward the target at a snail's pace. You might want to set up a second computer to play some other game during your spare time.

Ground Attack introduces the non-scrolling scrolling game. In this Defenderoid game, once you have traveled one screenful from left to right, the screen is erased, and a new one appears. Clever touch.

The pace picks up in Space Rocks, which is (what a lucky guess) an Asteroids-style encounter. This game uses the Vic-20 joystick and is actually a decent version of the arcade classic.

Saving the best for last, Storm is a slow-moving, but enjoyable encounter that has been adapted from no arcade game with which I am familiar. The object is to zap offending aliens as they emerge from a black hole and start toward you as you roam the left edge of the screen. Various kinds of weapons are available, and it *is* tricky to keep up with all the attacking forces. This game and Space Rocks are probably worth the price of the *Games Pack* alone.

Swarm

In *Swarm*, you are a tiny person who races around the bottom of the screen, attempting to blast a swarm of attacking insects. Some drop straight down like the spiders in Centipede. Others scroll down more slowly, although none can be said to have segments. The movement is distinctly chilopodic, however. Zillions of little dots have to be shot, and there are butterflies, birds, and other nice targets from which to select. The whole scenario looks like yet another John Carpenter remake of Hitchcock's *The Birds*.

"Wow! — This 'Air Patrol' game is the best one yet!"

creative computing
SOFTWARE PROFILE

Name: Swarm

Type: Game

System: 5K Vic-20

Format: Cassette

Language: Machine language

Summary: Bug invasion, Centipede style

Price: $29.95

Manufacturer:
Tronix Publishing, Inc.
8295 So. La Cienega Blvd.
Inglewood, CA 90301

You start with five little guys with which to fend off the invasion and a mind-boggling choice of 40 expertise levels. The top difficulty level is fun to try just once, just to give new meaning to the term annihilation. Beginners will have more fun at the easier settings.

Swarm has a few nice touches, but is a bit too free-form to suit me. I prefer the regimentation of a Galaxian style game. Give me disciplined aliens, so I can plan my moves a few femtoseconds in advance.

Sidewinder

Sidewinder is the best Defender variation for the Vic-20 I have seen. Its impressive array of features can be attributed in part to Tronix's use of the 8K memory expander—a rarity in a sea of software aimed at the lowest common denominator. Sorry, but you folks who bought your Vic-20s just to play games

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Vic 20 Games, continued...

creative computing
SOFTWARE PROFILE

Name: Sidewinder

Type: Game

System: 5K Vic-20

Format: Cassette

Language: Machine language

Summary: Defender-style game.

Price: $29.95

Manufacturer:
Tronix Publishing, Inc.
8295 So. La Cienega Blvd.
Inglewood, CA 90301

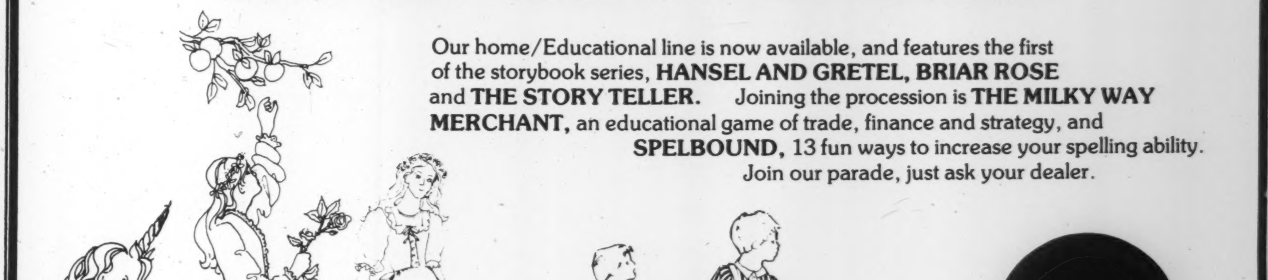
are going to have to purchase one of those nasty programmer-type memory Expansion Cartridges to enjoy this great contest.

A fast-moving jet helicopter is your vehicle; you have four with which to protect the planet from vicious invaders, including the dreaded black satellite. You may set the initial difficulty level from one to ten, depending on how brave or foolish you feel. Joysticks maneuver the chopper on its mission, which involves shooting down the bad guys while protecting a series of radar towers. The scanner may or may not be of help, depending on your ability to focus your attention on two parts of the screen at once.

When destroyed, the radar towers collapse in a messy lump that spoils the landscape and serves to remind you of your recent defeat. Worse, when all the towers have been eliminated, the scene turns black and you are forced to operate in the dark.

A free chopper is awarded at 3000 points. Another may be bestowed later in the game—I never got that far. Like Defender, this can be a difficult game. ☐

"You shouldn't decelerate so fast on the joystick!"



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CIRCLE 113 ON READER SERVICE CARD

TRS-80 Arcade Action

Owen Linzmayer

In the Dark Ages, coin-op arcade magicians conjured up magnificent new video games and the population rejoiced. It seemed as if a panacea for boredom had been found. But, lo and behold, a select group of computer-bearing citizens rose to their feet and shouted "We want Pengo. Give us Moon Patrol. Burgertime belongs to the people!"

The game lords were annoyed. They did not want to bother with such a small sect, and they turned their backs on the poor souls. Risking the wrath of the game lords, courageous individuals began to produce the computer games that were so much in demand.

Today these highly skilled professionals are still hard at work, slaving over keyboards into the wee hours of the morning. It is because of these programmers that TRS-80 owners can enjoy fine games such as *Penguin*, *Martian Patrol*, and *Hamburger Sam*.

creative computing
SOFTWARE PROFILE

Name: Penguin
Authors: Dubois and McNamara
Type: Arcade
System: 48K TRS-80 Model I/III
Format: Tape/disk
Language: Assembly
Summary: Adaptation of coin-op, Pengo
Price: $15.95/$19.95
Manufacturer:
Displayed Video
111 Marshall St.
Litchfield, MI 49252

Penguin

I would be lying to you if I said that *Penguin* is an exact replica of Sega's coin-op hit, Pengo. There is simply no way that the TRS-80 can emulate the colorful, hi-res graphics of a multi-thousand dollar arcade machine. *Penguin* is, however, similar to Pengo and although the two can't really be compared, *Penguin* is almost as whimsical and enjoyable.

> ***You can be sent to the big ice cap in the sky if you touch an icicle monster.***

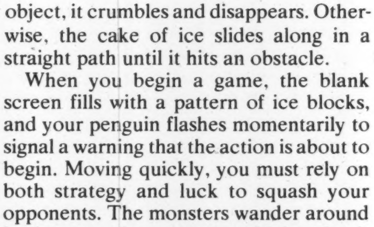
Penguin is played by one or two people who either take turns at the keyboard or swap a joystick back and forth. The object of the game is simple: kick blocks of ice to kill the enemy while avoiding contact with the deadly icicle monsters. If you kick an ice block when it is up against another object, it crumbles and disappears. Otherwise, the cake of ice slides along in a straight path until it hits an obstacle.

When you begin a game, the blank screen fills with a pattern of ice blocks, and your penguin flashes momentarily to signal a warning that the action is about to begin. Moving quickly, you must rely on both strategy and luck to squash your opponents. The monsters wander around in almost random patterns, which makes it difficult to plan ahead. The only way to kill these guys is to crush them with ice blocks.

You can be sent to the big ice cap in the sky if you touch an icicle monster, destroy all of the ice blocks, or let the timer run out. At first the game is rather easy, but as you progress, it becomes much more difficult.

I especially like the fact that each round offers a different board set up. Sometimes the field of ice blocks resembles a skull and crossbones, and at other times, the

Penguin.



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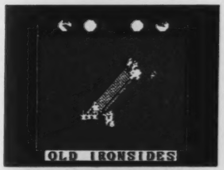

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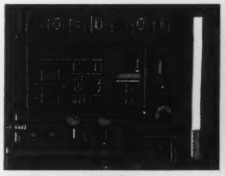

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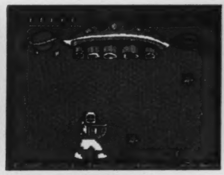

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CIRCLE 259 ON READER SERVICE CARD

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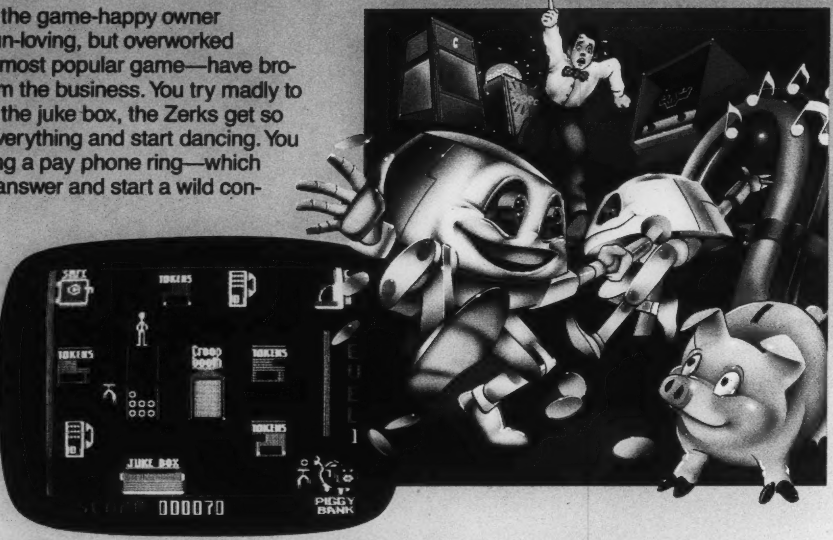

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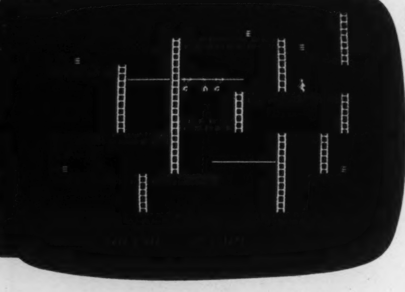

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CIRCLE 121 ON READER SERVICE CARD

blocks are positioned to form words. Each different pattern presents its own secrets and challenges, and learning these is half the fun.

The graphics in *Penguin* are cute, and the gameplay is light-hearted, but the sound effects are definitely lacking in intensity and complexity. With this minor deficiency taken into consideration, *Penguin* is still a quality game that deserves a place in any software library.

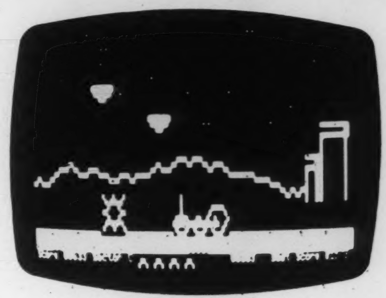
Martian Patrol

H. G. Wells's "War of the Worlds" undergoes an ironic twist in *Martian Patrol*. Instead of green beings from Mars invading Earth, we humans are overrunning the red planet. *Martian Patrol* is modeled after Williams's coin-op game, Moon Patrol.

You man a sophisticated land rover that just happens to be well armed and highly maneuverable. Land rovers can accelerate, propel themselves into the air, and simultaneously fire missiles forward and straight up. If things become a bit hectic, limited shield power is provided. All of these functions are controlled either with a joystick or via the keyboard.

The object of *Martian Patrol* is to explore various sections of the planet surface. The ground is broken into small strips called sectors. As you bounce along the surface you must avoid large craters, outcroppings of rocks, and land mines. All of these can be safely jumped, but only the rocks may be destroyed with rocket fire. Combine all of these hazards with concentrated air attacks from enemy ships, and you have one heck of a game.

The graphics of *Martian Patrol* are very nice. The surface, background and sky all scroll at different speeds which simulates depth of field. This gives the planet setting a very realistic quality. As you reach different sectors, the background scene changes from desolate mountain ranges to populated cityscapes and then back again.



Martian Patrol.

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SOFTWARE PROFILE

Name: Martian Patrol
Author: Rick Maurice
Type: Arcade
System: 32K TRS-80 Model I/III
Format: Tape/disk
Language: Assembly
Summary: Adaptation of coin-op, Moon Patrol
Price: $15.95/$19.95
Manufacturer:
Melbourne House
Dept. CS 347 Reedwood Dr.
Nashville, TN 37217
(615) 361-3738

The background scene changes from desolate mountain ranges to populated cityscapes.

TRS-80 users have come to expect professionally written programs from the people at Melbourne House. *Martian Patrol* is no let down. The sound effects are extremely well done with much attention paid to detail. The documentation, both external and internal, is thorough. Don't hesitate to buy another program by Rick Maurice sight unseen.

Hamburger Sam

Another recent release from the team of Dubois and McNamara, authors of *Penguin*, is a gem called *Hamburger Sam*. Very much like the coin-op game BurgerTime, the game requires that you guide your chef on a complex mission to build hamburgers. Aggressive, anthropomorphic comestibles attempt to defeat you, but you can defend Sam by using a limited supply of pepper.

creative computing

SOFTWARE PROFILE

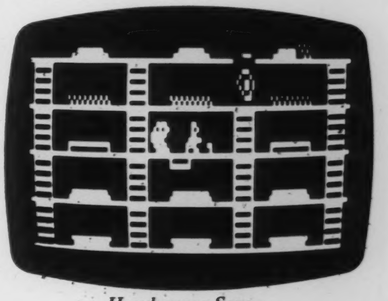
Name: Hamburger Sam
Authors: Dubois and McNamara
Type: Arcade
System: 48K TRS-80 Model I/III
Format: Tape/disk
Language: Assembly
Summary: Adaptation of coin-op, Burger Time
Price: $15.95/$19.95
Manufacturer:
Displayed Video
111 Marshall St.
Litchfield, MI 49252

A maximum of two people can play *Hamburger Sam*, by alternating turns at the keyboard. The game begins with Sam at the bottom of an empty multi-tiered building. On the first screen, you must build a total of three hamburgers to advance to the next round.

To build a burger, you must walk over the food parts. This causes them to drop to the platter waiting at the bottom of the screen. Since the parts are positioned one below the other, walking over one piece makes it fall onto the part below it. Thus begins a chain reaction with each part dropping one level closer to the platter.

Each burger consists of a top bun, lettuce, cheese, meat, and a bottom bun. When all of the burgers have been assembled, a new round begins with more burgers to build.

Also writhing on the ledges with Sam are hot dogs, pickles, and fried eggs. These are to be avoided. Touching any of these walking foods kills you and begins the round anew. You have one defense: pepper. If a pickle is coming at Sam, he can destroy it by tossing a handful of pepper at it. Also, the enemy food monsters are killed if you drop a burger part on them from above.



Hamburger Sam.

I have spent a considerable amount of time playing *Hamburger Sam* and have conquered the first three boards. The more advanced rounds require that you complete more burgers and defend yourself against increasing numbers of aggressive victuals. I don't know how many different screen configurations there are, but I doubt whether I shall ever pass the fourth level.

There is no on-screen scoring in *Hamburger Sam*—the score and bonus points are displayed every time a board is completed or a life is lost. The amount of pepper remaining and the number of surviving chefs are shown in the bottom corners of the play screen. With a smorgasboard of features, *Hamburger Sam* has all the makings of a TRS-80 video game feast. □

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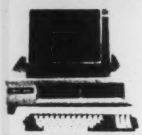

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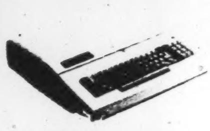

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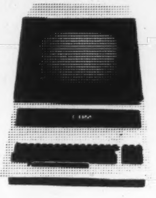

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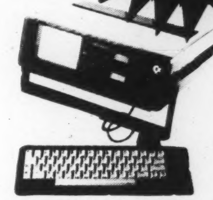

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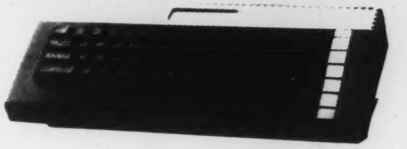

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Words, Words, Words

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Some people like word games; others don't. To some, an evening or rainy afternoon spent playing Scrabble or Boggle with a literate partner is what an unlimited supply of quarters is to others. Sometimes, however, it is difficult to find a likeminded opponent. That is the beauty of computer word games. Some of them can be played with other people, of course, but they can also be played solitaire, offering the opportunity to sharpen your wits or improve your spelling or vocabulary skills.

The following are reviews of some of the popular word games available for personal computers. Not all are available for all computers, so check the Software Profile to see which ones will run on your computer.

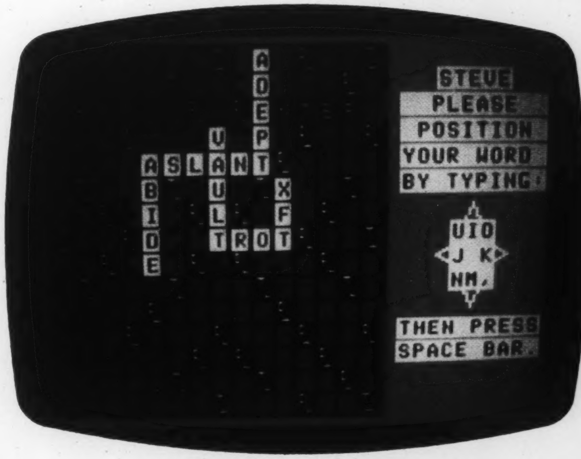
Monty Plays Scrabble

Monty Plays Scrabble is among the most impressive programming feats I have ever seen. Ritam has done such a good job with this game that it almost has to be seen to be believed, but I will attempt to do it justice in the following description.

It is easier to play Scrabble with Monty if you have handy a Scrabble board on which to duplicate the play of the game. Using the keyboard to rearrange your letters just doesn't measure up to the sensation of arranging your own tiles on your own little rack. The only problem is that I couldn't find a single computer that had enough room on its table or desk to spread out the board. I finally had to balance the board on a chair placed alongside the computer.

To begin the game, you can either have Monty choose the tiles for all players or you can choose the tiles for him. It is easier to have Monty do the choosing and tell you which letters you have to work with. From there on, the game plays exactly like a regular game of Scrabble.

When it is your turn, you see a colorful Scrabble board, complete with double



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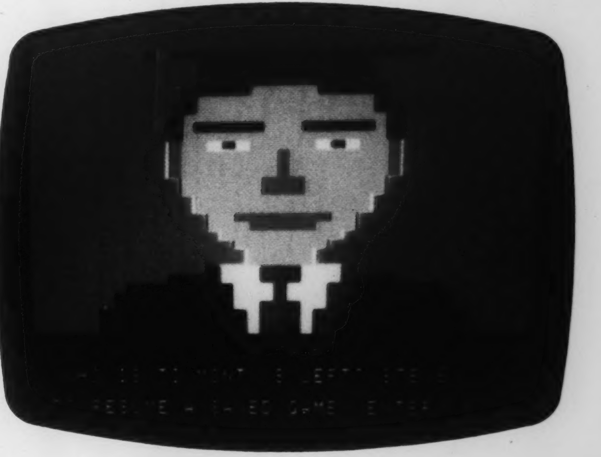

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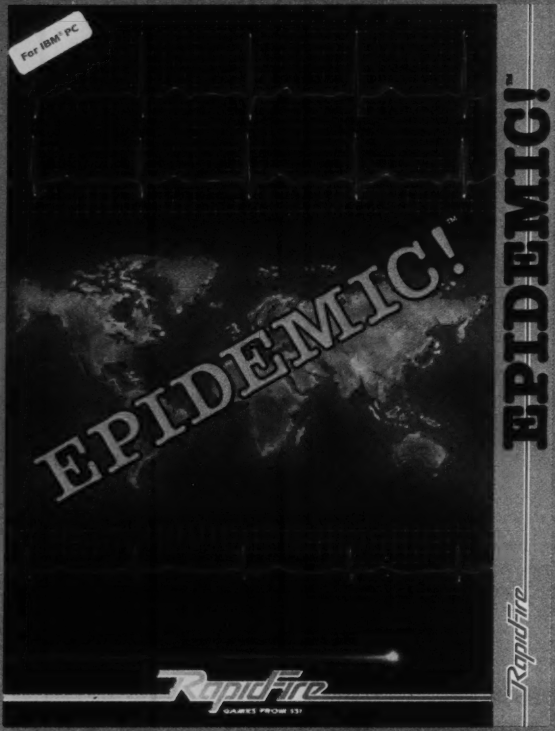

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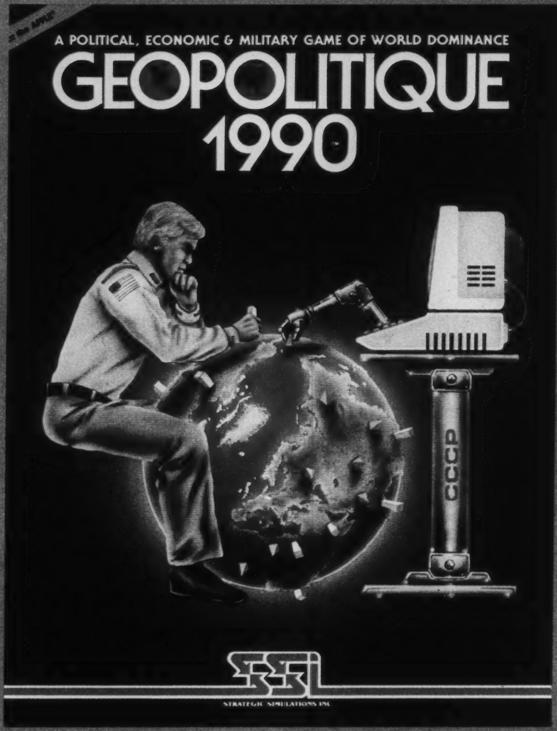
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and triple word and letter scores, on the screen. When you are ready to play your word, you press RETURN, and Monty asks what word you want to play. You simply type it in and tell Monty whether you want to place it down or across on the board. The board then reappears with your word flashing in the center, superimposed over the game. You use the I, J, K, and M keys to control the direction of your word as you move it into place. Monty then calculates and displays your score; he may also add a congratulatory note—but only if your play was particularly good. Then he tells you which tiles to add to your collection.

When it is Monty's turn, you see the board again with the message I'M THINKING. The length of time Monty spends thinking depends on the skill level you choose at the beginning of the game. At the Novice level, he thinks quite quickly; at level four, Scholar, he can take several minutes to find his best word. When he has made his choice, he tells you what letters he is using, so you can remove the corresponding tiles from the pile. You then see the entire board again with his newly added word flashing, and you place the tiles on the real board.

He calculates his score, displays it for you, and then asks if you want to challenge the word. Challenges are made according to official Scrabble rules. Monty can also challenge your words, but you are the final arbiter; you must decide whether the challenged word is legal and tell Monty. If Monty makes a mistake, he apologizes: MONTY REGRETS HIS ERROR.

The games I played with Monty this past weekend were the best games of Scrabble I have ever played, in terms both of challenge from my opponent and the quality and point value of the words I created. I think this was because I was able to spend as much time as I wanted preparing my words; I did not have to worry about a human opponent threatening to go out for pizza during my turn.

creative computing

SOFTWARE PROFILE

Name: Monty Plays Scrabble

Type: Word game

System: 48K Apple, 48K TRS-80 Model III

Author: Robert J. Walls

Format: Disk

Language: Assembly and Basic

Summary: An extraordinary programming feat and an excellent game.

Price: $39.95

Manufacturer:
Ritam Corporation
P.O. Box 921
Fairfield, IA 52556

Monty Plays Scrabble offers four levels of play. At the Novice level, Monty plays like a good human Scrabble player. At the Scholar level, he takes so long to make his moves that I was tempted to go out for pizza. When playing at the higher levels, he increases the point values of his plays by creating two and three words at a time in crossword puzzle fashion. Oddly, at the Novice level he beat me by 16 points, while at the Advanced level, three, I was able to defeat him by about the same number of points.

Like *Jotto*, Monty has an enormous vocabulary. I thought that some of his words were just a bit much, however. How many humans do you know whose vocabularies include *ala, flied, yond, eth, op, cwm,* and *oxy*?

As you may have gathered, the programmers of *Monty Plays Scrabble* have given Monty a personality. During his move he sometimes appears on the screen in lo-res graphics. When you use a word he doesn't recognize, he shakes his head and says: An interesting play, but Monty wishes to challenge. Monty, like *Jotto*, is very polite, and I became quite fond of him during my play of the game. I even felt very guilty when I entered the illegal word *pez* and told him it was OK—just to find out what would happen, mind you.

I was suspicious when, during my first game with Monty, he "drew" 52 points worth of high value letters to my 25 points worth. I thought that perhaps he had become a little too human, but my fears were allayed during subsequent games in which the distribution of tiles was more equitable.

It is very seldom that I can find in a program as complex as this nothing to complain about. The game is flawless in its execution, and I recommend it highly.

FRANK ZUBEK

"Hey Bob — I just bought that new game called 'Metamorphosis' — guess what?"

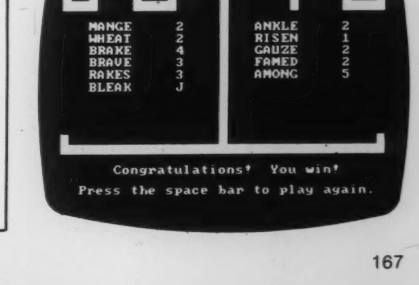
Jotto

Jotto from Word Associates is a computerized version of the pencil and paper game we all played as kids (at least those of us who grew up to be editors did). It is also one of the few games you can play on the IBM Personal Computer in your office that does not have the graphics adapter. There is also a version for the Apple.

To play, you first think of a secret five-letter word, which you can write down on the special Jotto Scratch Pad that comes with the disk. Your word must be in English, and it cannot be a proper noun—those are the only limitations on your choice. While you are doing this, *Jotto* thinks of its own secret five-letter word. Then you both begin to guess.

You start by typing a five-letter word on your half of the screen. *Jotto* responds, telling you how many letters your guess and its word have in common. Then *Jotto* guesses, and you must reveal how many letters in the word it guesses are in your secret word.

You can, if you feel like cheating, enter non-words such as ABCDE. Both versions of the game know that you are cheating. The IBM version, however, is "too polite to tell you," according to author George



```
MANGE     2          ANKLE     2
WHEAT     2          RISEN     1
BRAKE     4          GAUZE     2
BRAVE     3          FAMED     2
RAKES     3          AMONG     5
BLEAK     J

        Congratulations!  You win!
     Press the space bar to play again.
```

creative computing
SOFTWARE PROFILE
Name: Jotto
Type: Word game
System: 64K IBM PC, 48K Apple
Author: George A. Miller,
Dick Bernstein
Language: Pascal, Assembly
Summary: Excellent adaptation of an old favorite
Price: $29.95
Manufacturer:
Word Associates
55 Sutter, Ste. 361
San Francisco, CA 94104

Miller. The Apple version responds with "I don't know that word. Do you want to try another?" If you say no, it will accept your non-word.

The words guessed by both players remain on the screen, and you can keep track of the letters you think are in the secret word on the Scratch Pad. The first one to guess the other's word wins. If you make a mistake and give *Jotto* incorrect information about your word, it will eventually give up, asking what your word was. It will then tell you that you made a mistake and declare itself the winner. (*Jotto* never makes mistakes.)

The game is simple. The thing that makes it challenging is the same thing that makes it an extraordinary programming feat: the size of its vocabulary. Playing a preliminary version of *Jotto*, Dave Ahl was able to stump it with "quark"; he tried to do it again with the production version and failed. In fact, neither of us was able to come up with a word that *Jotto* didn't know. This does not mean that the computer always wins; it is possible to guess its secret word before it guesses yours, but your powers of logic and deduction must be in top form to do so.

Jotto is not a game for the casual arcader. It is a game for people who enjoy an intellectual challenge. If you like it the first few times you play it, you will not grow tired of it. It is the kind of game that will sit on your shelf and call to you from time to time, urging you to take just a few minutes off to try to beat it.

George Miller: A Man For All Games

George Miller, author of the IBM version of *Jotto* and a partner in Word Associates, was the first person I ever knew who talked about computers. That was in 1961 when George was a high school student.

He was the first person I ever heard predict that we would have computers in our homes. That was in 1971 when he was working on his Ph.D. in computer science at Pennsylvania University. At the time I thought it was just one of George's flaky ideas; I was secure in the knowledge that even if such a thing were to happen to him, I would certainly remain aloof.

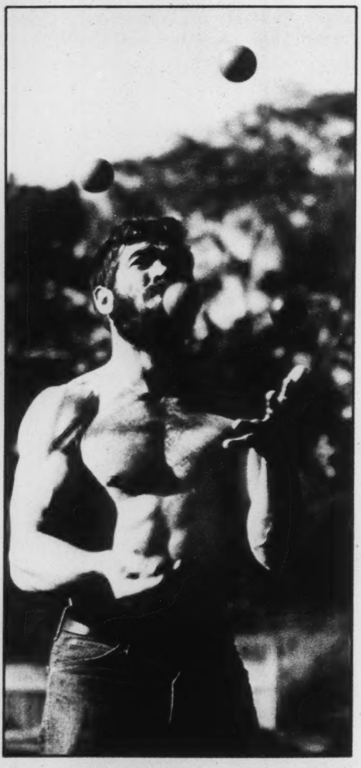
When he was in high school, he and a friend tried to build a computer. "I had just learned about computers. Someone told me that a computer could calculate a square root. I was skeptical, so he explained the algorithm. I was fascinated."

He wanted to know more about computers, so he began to learn about diodes and relays, and using this new-found knowledge, designed a computer to play the game of Nim.

"I had a friend who knew how to solder. We got a whole bunch of diodes and relays of different sizes from our science class and tried to implement the logic diagram directly. The wiring was amazing; the whole thing looked like a mass of spaghetti.

"We ended up with a row of lights and a bank of switches, and when we turned the power on they all glowed dimly. We figured that we needed more power, so we got a larger transformer; the lights just glowed a little brighter. The thing never did work. We finally made a mechanical version that allowed two people to play the game and won an honorable mention at a science fair."

George's passion for computers and computing is closely linked with his love of games and his competitive spirit. People who have played games with him will warn you that if George asks you to play, it is because he is certain he will win. For every game from skittles to canasta to Go, he has a strategy derived often from long hours of study and play. Nobody likes to lose, of course, but many people (like me) balk at the idea of investing hours or even years in a game; George seems to welcome the challenge. I have no doubt that George considers every victory of *Jotto* over a computer game a personal triumph. (I refuse to tell him how many times it has beaten me.)



George Miller juggles five balls in Golden Gate Park while trying to decide which game to program next.

He first played *Jotto* with his mother in the late 50's, and one year he and his brother gave each other the game for Christmas.

He first started working on a program to play *Jotto* in 1965. He programmed it in Fortran for an IBM 7094. Then for several years he carried around a deck of cards on which the words for the program were punched. "I needed two boxes to contain them all," he recalls. "Later, I transferred them to a reel of tape, and now they all fit on a 5 1/4" floppy disk."

At the West Coast Computer Faire in March, Dick Bernstein happened by the booth where Word Associates had *Jotto* on display. Dick told George that he had been working on a version of Jotto for the Apple for four years. The two teamed up, and Dick is now part of Word Associates, along with Karen Shapiro, George's original partner.

Future plans of Word Associates include a version of *Jotto* "for all the computers in the world," an ambition that would have seemed much less attainable a few months ago before the announcement of the MSX standard. Other goals include computerized versions of GoMoKu, a game that George has already programmed in Fortran, and Chinese Checkers. "My ultimate goal is to write a program for every game in my collection," says George. Remember, you heard it here first.—*EBS*

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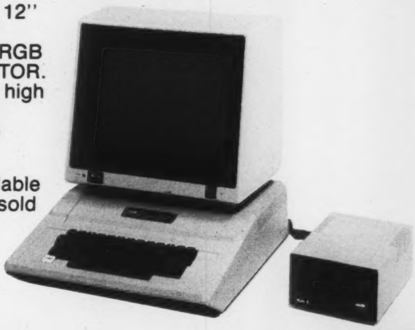

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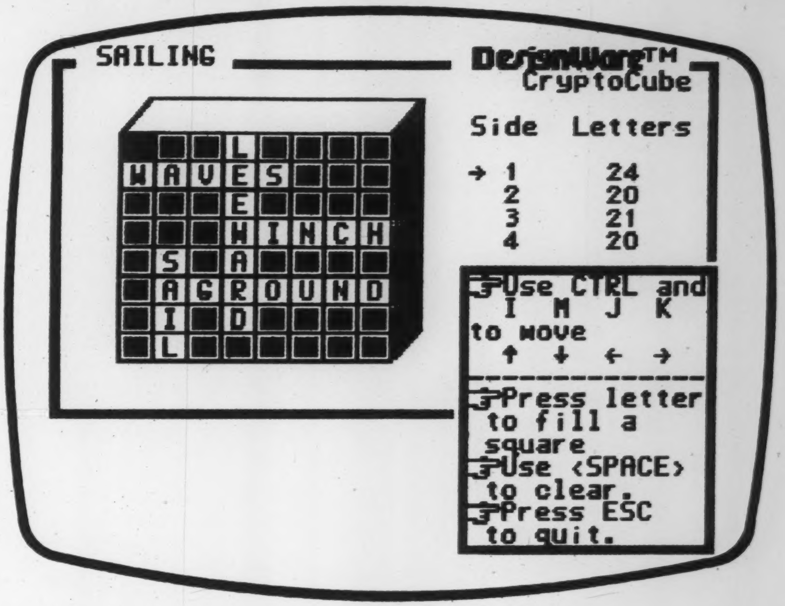
Crypto Cube

DesignWare calls *Crypto Cube*. "The Family Word Puzzle" and couches the documentation in educational terms. It is also a genuinely enjoyable game, hence its presence in an article on game programs.

The game starts by offering you a selection of 50 word lists from which your puzzle can be made. The topics covered by the lists include such diverse areas as constellations, easy animals, writers, and Latin origins.

After choosing a topic, you may ask to view the list before beginning the puzzle. Then the program asks whether you want to use the pre-programmed puzzle or have the computer concoct a new one from your word list.

The game display is the blank face of one side of a cube. To play, you move the cursor around on the grid using CONTROL-I, M, J, and K. To flip a square so you can see what is under it, you press the spacebar. You may find a vowel, a question mark, or a blank square. If you locate a vowel, you get 5 points. If you land on a question mark, you must guess what consonant it represents; if your guess is correct, you get 10 points; if it is incorrect, you lose your turn and 5 points. If you turn over a blank square, you lose your turn. The computer keeps score for one or two players, and you can watch the points being subtracted from your score after every incorrect guess—a disheartening experience.



```
SAILING                    DesignWare™
                             CryptoCube

■ ■ ■ L ■ ■ ■ ■            Side   Letters
W A V E S ■ ■ ■
■ ■ ■ E ■ ■ ■ ■            → 1      24
■ ■ ■ W I N C H              2      20
■ S ■ A ■ ■ ■ ■              3      21
■ A G R O U N D              4      20
■ I ■ D ■ ■ ■ ■
■ L ■ ■ ■ ■ ■ ■            Use CTRL and
                             I   M   J   K
                           to move
                             ↑   ↓   ←   →
                           ---------------
                           Press letter
                            to fill a
                           square
                           Use <SPACE>
                            to clear.
                           Press ESC
                            to quit.
```

creative computing

SOFTWARE PROFILE

Name: Crypto Cube

Type: Word game

System: 48K Apple, 48K IBM PC with color/graphics adapter, 48K Atari

Format: Disk

Summary: Good fun for the whole family

Price: $39.95

Manufacturer:
DesignWare
185 Berry St.
Bldg. 3, Ste. 158
San Francisco, CA 94107

You may look at the word list from which the puzzle was made at any time during play, but that seems an awful lot like cheating. Perhaps that feature is best used to equalize differences in vocabulary between players. A parent/opponent could, for example, offer to look away while a child examined the list during play.

The game is much more difficult to play than it sounds as I describe it here, and the word gamers on our playtest panel enjoyed it in both two-player and solitaire modes.

"Paul, you have to remember to turn off Centipede — you know how you tend to fall asleep!"

The one critcism I have concerns the cursor control keys. Since the only difference between the letter J and a cursor movement to the left is the depression of the CONTROL key, it is very easy to find yourself "guessing" a letter J, K, or M and watching your points disappear when you really wanted to move to another square. There are many keys on the keyboard that are not used for letter guessing, and almost any combination of these would have eliminated this problem.

After you have learned all the words in the lists that come with the program, or if you have a list of words you want to practice, you can create your own word lists and have the computer scramble them into puzzles for you. Instructions for doing this are very clear and error trapping is good, so it is very difficult to make a mistake in this phase of the game.

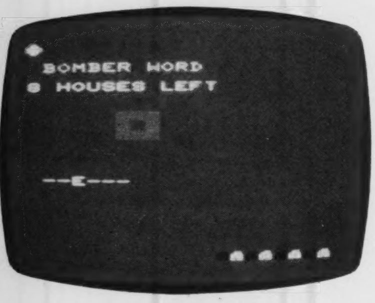
The verdict: I like *Crypto Cube*. It is fun for adults and children alike, and a worthwhile challenge for people of all ages who want to improve their facility with words.

Bomber Word

The packaging says that *Bomber Word* is "a unique graphic word game." Graphic word game, maybe; unique, hardly. *Bomber Word* is actually another version of Hangman.

It is not, however, a bad version of Hangman. The screen displays shows, instead of the familiar gallows, a row of small houses in the lower righthand corner. Above the dotted line on which you fill in the letters of the mystery word is a square in which the letter of your current guess appears. There is no provisions for display of the letters you have guessed on previous turns—a feature that even my elementary school teachers included on their blackboards.

You guess a letter by typing it in from the keyboard. It then appears in the guess square, and if it is correct, it is instantly transferred to the proper position on the dotted line. If the letter you guess is not in the mystery word, a small airplane flies across the screen from the left to right and bombs one of your houses. Unfortunately, the houses do not simply explode and disappear; after one is hit, you must wait for it to slide across the bottom of the screen and make its exit at the bottom lefthand side—a process that soon becomes tedious. When you guess the word, the screen display changes to a congratulatory message—always the same—and plays a rather long tune. Somehow, the promise of a "clever surprise" on the package led me to expect something a little more entertaining. Fortunately, you can cut the whole thing short by pressing the RESTORE key.



```
BOMBER WORD
8 HOUSES LEFT

--E---
```

At the beginning of each round, you choose either hard or easy words. Easy words are said to have more vowels and be "more common in natural speech. Hard words are more difficult to guess," and presumably more common in unnatural speech. The hard words are, indeed, more difficult to guess, and, once again, this feature could be used to equalize differences in player skill.

creative computing

SOFTWARE PROFILE

Name: Bomber Word

Type: Word game

System: Vic 20

Author: Charles Goldman

Format: Cartridge

Summary: Hangman turns bomber pilot

Price: $29.95

Manufacturer:
Micro-Ware Distributing, Inc.
P.O. Box 113
Pompton Plains, NJ 07444

Other options from which you can choose between games concern words that you add to the game yourself. To do this, you must first type in a 17-line program provided in the documentation, save it on cassette, and then enter your own words of up to eight letters. You may save these words for as long as you wish and practice them by choosing the proper option at the beginning of a round.

The documentation for *Bomber Word* is perhaps the weakest part of the package. It consists of a single 4 7/8" x 8" slip of yellow paper on which the typewritten information is printed. Everything you need to know to play the game is there, but the information is poorly organized and visually unattractive. The worst thing, however, is the presence of the non-word "casette" in several places. Perhaps this is just a typographical error, but it seems to me that a spelling error of any kind is inexcusable in a spelling program.

At $29.95, *Bomber Word* seems a bit pricey for what it offers. At about $10 less, it would be reasonably entertaining way to practice spelling words.

Pandemonium

Pandemonium, like *Crypto Cube*, is played on a grid. The difference is that in *Pandemonium* you place the letters on the grid yourself. The computer chooses letters for you, and you place them on the 5 x 5 grid one at a time as you attempt to spell words vertically, horizontally, and diagonally.

The game offers four modes of play, which significantly affect the way the game is played. Game one is the standard game in which the program spews out 25 letters for you to arrange; you must take them all, and you can't move them around after you have made your initial choice. In game two, too, you are stuck with the letters, but after you have placed them all on the grid, you get a chance to go back and rearrange them with the hope of getting a better score. In game three, you can't rearrange the letters, but you get to reject five of them as they are presented. In game four, you can both reject five letters and rearrange the grid at the end.

Needless to say, the last option leads to the highest scores. Letters are assigned point values based on the frequency with which they occur in English words: the vowels, L, N, R, S, and T are worth 10 points each; Q and X are worth 100 points each. Eight of the squares on the grid are "doubling squares which double the point value of the resident letter." The center square trebles the value of the letter.

Although the order in which the letters are generated is random, the frequency with which they appear corresponds to the frequency with which they appear in the language. Much of the time, this is actually bad news, because, although it makes the game easier, there is a limit to the number of interesting words you can make with vowels. In one game, for example, I was offered six A's, four R's, four E's, two F's, and two G's. Another time I got two Y's in a row. Perhaps a somewhat more sophisticated algorithm would have provided more interesting play.

creative computing

SOFTWARE PROFILE

Name: Pandemonium

Type: Word game

System: 48K TRS-80, 48K Apple, 40K Atari 400/800

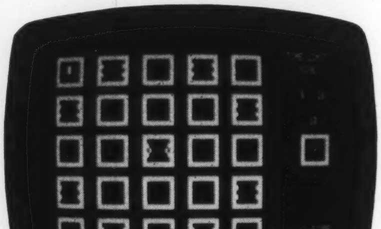
Author: Norman J. Wazaney, Jr.

Format: Disk

Summary: Entertaining word game with a somewhat limited vocabulary

Price: $39.95

Manufacturer:
Soft Images
200 Route 17
Mahwah, NJ 07430



The documentation, which is excellent, says that the game can be played by any number of people. It is, in fact, a solitaire game that can be enjoyed by a group in several ways: Players of differing skill levels can vie for the high score given different amounts of time. At the beginning of each round, you must specify the length of the game you want to play—1 to 60 minutes or unlimited time—so an adult could match wits with a child somewhat fairly by giving himself a shorter time period in which to arrange his letters.

Since at the end of each round you have the option of replaying the letters you have just arranged, several players could take turns trying to get the high

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CIRCLE 178 ON READER SERVICE CARD

score with the same letters. The high score for the session is displayed on the screen but not stored on disk.

A less attractive scenario involves a group of players sitting around the computer making a committee decision regarding the placement of each letter—for this one you had better choose the unlimited time allotment.

In contrast to *Jotto*, *Pandemonium* does not have a particularly impressive vocabularly. The fact that its entire vocabulary of three-, four-, and five-letter words is listed in the documentation booklet should have given me a clue, but I was disappointed, nevertheless, when it failed to recognize *mourn*, *spate*, *preen*, *eye*, and several other words that I played. It listed *eyes* in the Three-Letter Word Dictionary, but did not give me credit for the singular.

The documentation boasts that "the dictionaries contain most of the valid three-, four-, and five-letter words in the English language" with the exception of "proper names, obscure words, slang words, and uncommon spellings." I did not feel that the rejected words belonged in any of these categories, and it seems to me that a game that challenges you to exercise your vocabulary ought to be able to meet that challenge.

Aside from that one somewhat serious shortcoming, *Pandemonium* is a good game, and it should provide many hours of entertainment—and maybe even a little education—for players of all ages.

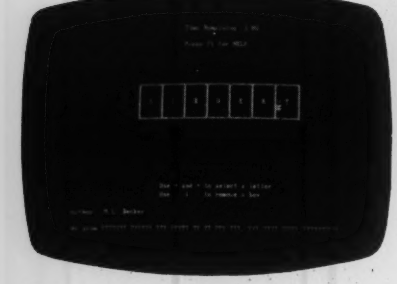
Quotrix

Quotrix is a word game in which the guessing of a series of mystery words leads to the satisfying completion of a quote from a well known person.

Before the game begins, you have the opportunity to choose one of six skill levels and to set the number of players. As you begin the game, you see at the bottom of the screen the name of the person being quoted and a series of words all of whose letters have been replaced by question marks.

There are three "puzzle formats," selected at random by the program to help you guess the words in the quote. Load the Camel's Back is Middle Eastern style Hangman: you guess the letters in the word on which you are working. If you guess correctly, the letter is filled in in the word. If your guess is incorrect, the letter appears in a burdensome box on the dromedary's back and you lose points. The beast can carry only six of the superfluous letters; after that his back breaks and you lose credit for the word.

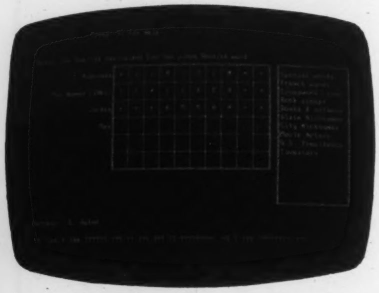
The second format is Word Jumble, a timed exercise in which you use the cursor control keys to arrange the letters of the scrambled mystery word in the proper order. This is at once the simplest and most difficult of the formats.



Word Jumble.

Load the Camel's Back.

The third format is one which seems to appear most frequently. In Pick and Solve you choose from a list of about a dozen topics, including movie actresses, state capitals, Spanish words, French words, rock groups, and animal groups. The program then asks a simple question about the category you have chosen and you type the answer on a grid in the center of the screen. At the beginner level, you have six chances to get the correct answer; at the master lever, only one. When you get the correct answer, it is displayed on the grid, and you must choose a new category upon which to be quizzed. When the grid has been filled in, one of the vertical columns will spell the mystery word.



Pick and Solve.

Pick and Solve is the weakest of the formats. If you have a good mind for trivia, you will enjoy testing your memory on the little quizzes—except when the same questions recur time and again—but you will feel absolutely no responsibility for having filled in the word. This part of the game would be much more fun if there were a way to earn extra points by guessing the word before the grid was full.

Likewise, the challenge of the whole game would be greater if there were a way to earn extra points by filling in words in the quote without entering one of the puzzle formats. You can choose which word you want to work on, but there isn't much point in doing so since you must work your way through every word. And it is nothing short of tedious to answer a question to fill in a one line "grid" solving for "a."

You are supposed be able to choose your word in the quote, your topic for the quiz, and your skill level by controlling a highlighted area with the cursor control and function keys. Unfortunately, this feature did not work on the disk we received. I called Insoft and asked for help. The woman who answered the phone surmised that I had a defective disk and promptly sent a replacement which had exactly the same problem. Further calls to Insoft elicited only assertions that they had never heard of the problem and offers of another replacement disk. I was able to use the selection feature by carefully counting my presses of the arrow and function keys, but that method was far from ideal.

Shortcomings aside, I felt myself drawn to *Quotrix*. As my deadline approached, I found myself putting off the writing of this review as I promised myself just one more chance to better my score. High scores for each player on each skill level are saved on disk, and the motivation was high for me to ensure that my scores in all categories were higher than those of other lexiphilic staffers. In many games of *Quotrix* I never got a duplicate quote, and I look forward to bettering my scores time and again. ☐

creative computing
SOFTWARE PROFILE

Name: Quotrix

Type: Word game

System: 64K IBM PC

Author: Jeremy Wilson

Format: Disk

Summary: Solving puzzles reveals the mystery quote.

Price: $34.95

Manufacturer:
Insoft, Inc.
10175 S.W. Barbur Blvd.
Ste. 202B
Portland, OR 97219

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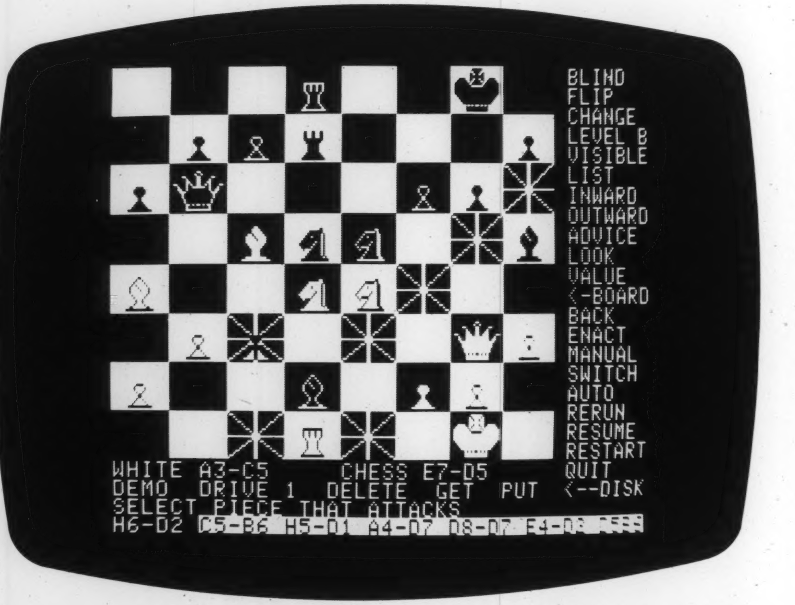
CIRCLE 116 ON READER SERVICE CARD

Chess 7.0



```
WHITE A3-C5      CHESS E7-D5
DEMO  DRIVE 1  DELETE  GET  PUT
SELECT PIECE THAT ATTACKS
H6-D2 C5-B6 H5-D1 A4-D7 D8-D7 E4-D3 [illegible]
```

Frank Sommers

The true aficionado of electronic chess who has turned to his computer for additional pleasure has bemoaned the lack of a computer chess program to equal the dedicated boards—those well-remembered preceding generations of Boris, Fidelity 7, Sensory Chess Challenger, Sargon II, and finally the best of the wireds, Chess Challenger Champion.

As *Chess 7.0* boots up and a majestic knight announces the program, there ensues a 10-minute demonstration that is both intriguing to watch and a documentation tutorial of the first rank. The 27 cursor-controlled features prance before you at a speed that holds your attention, familiarizes you with the multiplicity of functions, and expands upon the skillfully done 64-page user's guide.

Any chess program must have the basic moves, including *en passant* and pawn promotion as essential functions. The better games allow you to take back three or more moves, and *Sargon II* and Chess Champion will let you look ahead, i.e. give you hints. They also are expected to set up chess problems and perform mate-in-two maneuvers.

Until now the current top-of-the line, for my taste, was Chess Champion, which allows you to call up games which exhibit 50 openings and 50 famous games for you to follow or play against. *Chess 7.0* allows you to call up over 30 chess classics and watch them march across the board automatically, or in single step fashion, if you wish to study the play.

Then there is the save feature, unparalleled in any existing electronic chess game, which allows you not only to save the game you are playing but to create an entire library of your own games (40 to the disk).

One criticism of *Chess 7.0* is that although there are 7000 openings built into the program which permit faster and stronger programmed openings, you cannot summon a particular one. This may be a disadvantage for the advanced beginner or intermediate player who is still trying to master his openings. This lack can be overcome, though, by setting up a library of games exhibiting the openings you wish to study on a separate disk or disks. You may then load these at will.

Levels of Play

Chess 7.0 is programmed at level 6 to play the standard tournament 40-move game in two hours. It advertises 17 levels of play and indeed has them. Levels 0-2 are for familiarization and beginners. Levels 3-6 are for standard game play. For positional analysis levels 7 and 8 will search ahead to a depth of 7 and 8 moves.

The levels are divided into two categories, 1-8 and A-F. The numerical option selects a specified time per move and a certain level of search, say 3 which will give you from 1-3 levels of search, but each move must be completed within 20-40 seconds.

With the A thru F settings you dictate

creative computing

SOFTWARE PROFILE

Name: Chess 7.0

Type: Classic game

System: 48K Atari, 48K Apple, 32K TRS-80

Format: Disk

Language: Assembly

Summary: A world class program

Price: $69.95

Manufacturer:
Odesta
930 Pitner
Evanston, IL 60202

Frank Sommers, 4624 Langdrum Ln., Chevy Chase, MD 20015.

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE, AND COMPATIBLE WITH APPLE II, II+ AND IIe.*
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```
10 HGR2:
   FOR X=0 TO 255:
   POKE 228,X:
   HPLOT 0,0:
   CALL-3082:
   NEXT X
```

YA KNOW, HARRY... I NEVER THOUGHT OF IT QUITE LIKE THAT.

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(**$29.50**: Includes Peeks & Pokes Chart)

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APPLESOFT ENHANCER by MARK SIMONSEN

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ELSE follows If-Then's (as in IF X=2 THEN PRINT "Yes": *ELSE* PRINT "No"). **SWAP X,Y** exchanges 2 variables' values. Use **TONE** command to write music with no messy pokes & calls. **HSCRN** reads the color (off/on) of any hi-res dot. **SCRL** scrolls the text screen in *either* direction. **TXT2** lets Text Page 2 act like Page 1.

Also— GOTO or GOSUB may precede variables (as in "GOSUB FIX" or "GOTO 4+X". Escape-mode indicated by special ESC CURSOR. Replace Apple's awkward Graphics Screen Switch pokes with one-word commands. Change ctrl-G Beep to any tone. INVERSE REM STATEMENTS too! All GPLE® compatible.

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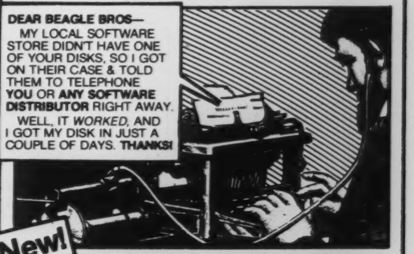
Excellent Reviews— (see Jan-83 *Softalk*, page 148). BEAGLE MENU too: Description under "Typefaces".

(**$29.50**: Includes Peeks & Pokes Chart)



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Chess, continued...

the minimum ply search to be completed regardless of time. A C setting for example would search 3-5 levels and might take from 1 to 10 minutes, depending on the complexity of the board. Thus with the letter settings for a slight increase in time you can select a stronger program.

Two other settings, M and P allow the chess-by-mail fan to search 22 ply while waiting for his next postcard, and the problem solver can do mate-in-11 problems.

Beginner's Paradise

For beginners there is a host of assists built into the program which make it one of the best chess teaching programs extant. The beginner can select an option that offers a screen image of the power and range of each piece. This evolves to a capability that helps the novice to check, at any point, to see what pieces might be threatening or to assess the killing power of any of his pieces.

Coupled with the Advice function are the Look and Enact options which reveal your opponent's intentions for the next several moves, and then allows you to enact the series or, if you choose, to select more wily moves. The take back of all or any moves and the replay function which will play the game over up to the point at which you commenced the take-back make the teaching potential of this program high indeed.

Documentation

With so much power and so many options, the question arises: how can a beginner hope to use the program without a night school course? Part of the answer is David Harmon's 64-page user's guide.

One page is devoted to "Things Everyone Should Know," a lesson to help you decide whether to use keys or paddles to run the program. This is possibly the most confusing part of the documentation, trying to decipher whether you press RETURN or the button on the paddle or something else.

The rest of the book is a jewel of triple level familiarization. First, you find two pages of Quick Start for the person who has used other chess programs. Then there are 10 pages describing step-by-step concise use of the functions, neatly expanding your existing knowledge from Quick Start. Finally on the third level, you find a Dictionary of Features, detailing the nuances of each option.

The program itself ran flawlessly for me. My second criticism is the lack of color on the chess board—presumably a result of memory limitations.

Customer Support

Within a week of the arrival of the program, another *Chess 7.0* disk arrived unsolicited from Odesta, announcing a glitch in the key-playing option (I never did discover what it was).

The author of the program is Larry Atkin, one of the two authors of the famous Northwestern University Chess 4.7 program that in the late 70's was the World Computer Chess Champion three years in a row. Atkin and his colleagues advertise Odesta as the software company that intends to explore the frontiers of intelligence. *Chess 7.0* does nothing to disparage that claim and a great deal to generate interest in what Odesta will do next. ☐

CHECKMATEY.
Campbell

Strategy Games and Simulations From SSI

Brian J. Murphy

Epidemic

What killed the dinosaurs? It wasn't a shift in the Earth's orbit, volcanic action, the movement of the continents, or a sudden cooling of the atmosphere. It was a plague, bourne to Earth by meteorites, and it is on its way here again!

That, at least, is the scenario for the destruction of the human race advanced by Steven Faber in his game *Epidemic* designed for Strategic Simulations, Inc. It is one of several exciting games released by SSI this year.

In *Epidemic* you are the commander of a global medical team, based in Antarctica and charged with defending the entire planet against the space plague. You are given powers that no dictator ever dreamed of. You even have the right to destroy totally vast regions of the planet if necessary to halt the advance of the deadly virus.

As the game begins a hi-res color display charts the progress of the infection in the fourteen regions into which the world has been divided. You can quickly determine which parts of the planet are infected, where curative measures have been undertaken, how many millions have died and which areas most need your attention.

Next you'll see a radar screen, charting the approach of new meteorites which threaten to hit untouched areas and infect new populations. Watching the course of the meteors, plotted against a world map, you will be able to predict which will hit the land and which will fall harmlessly into the sea.

creative computing

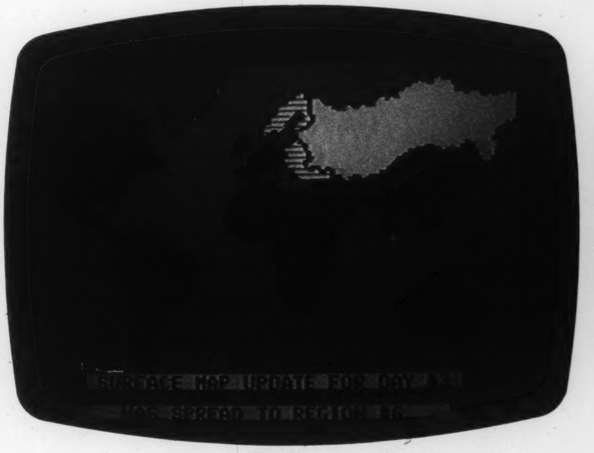
SOFTWARE PROFILE

Name: Epidemic
Type: Science fiction/strategy
System: Apple II, IIe, III
Format: Disk
Language: Applesoft
Summary: Medical war against alien plague.
Price: $34.95
Manufacturer:
Strategic Simulations, Inc.
883 Stierlin Rd.
Building A-200
Mountain View, CA 94043

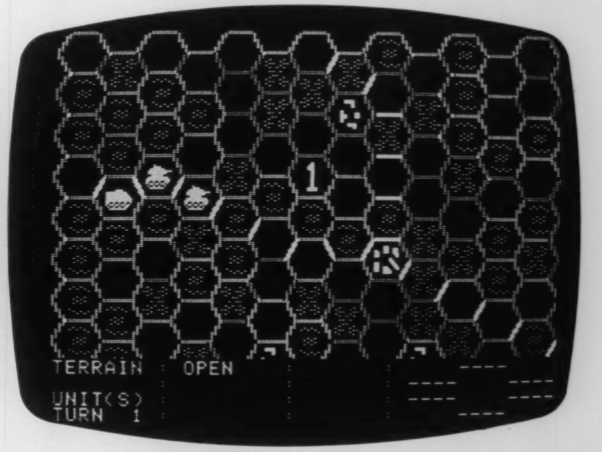
Now that you have the big picture, you can make the important tactical decisions needed to beat the malignant microbes. You have a diverse arsenal of weapons—medical, political, and military—at your disposal. In areas where the disease is at a less virulent level (killing only one or two million a day) you may use as many as eight different cures. Each has its advantages and drawbacks.

Interferon, for example, works well in killing the virus, but supplies are always severely limited, and a one-day allocation is the maximum for any region. X-ray machines are effective at first, but they have a high breakdown rate. In communist states martial law works well in preventing people from passing the disease along, but it does not work in democracies. The best hope lies in a complex gene splice technique which limits the growth of virus populations. Unfortunately the process takes five

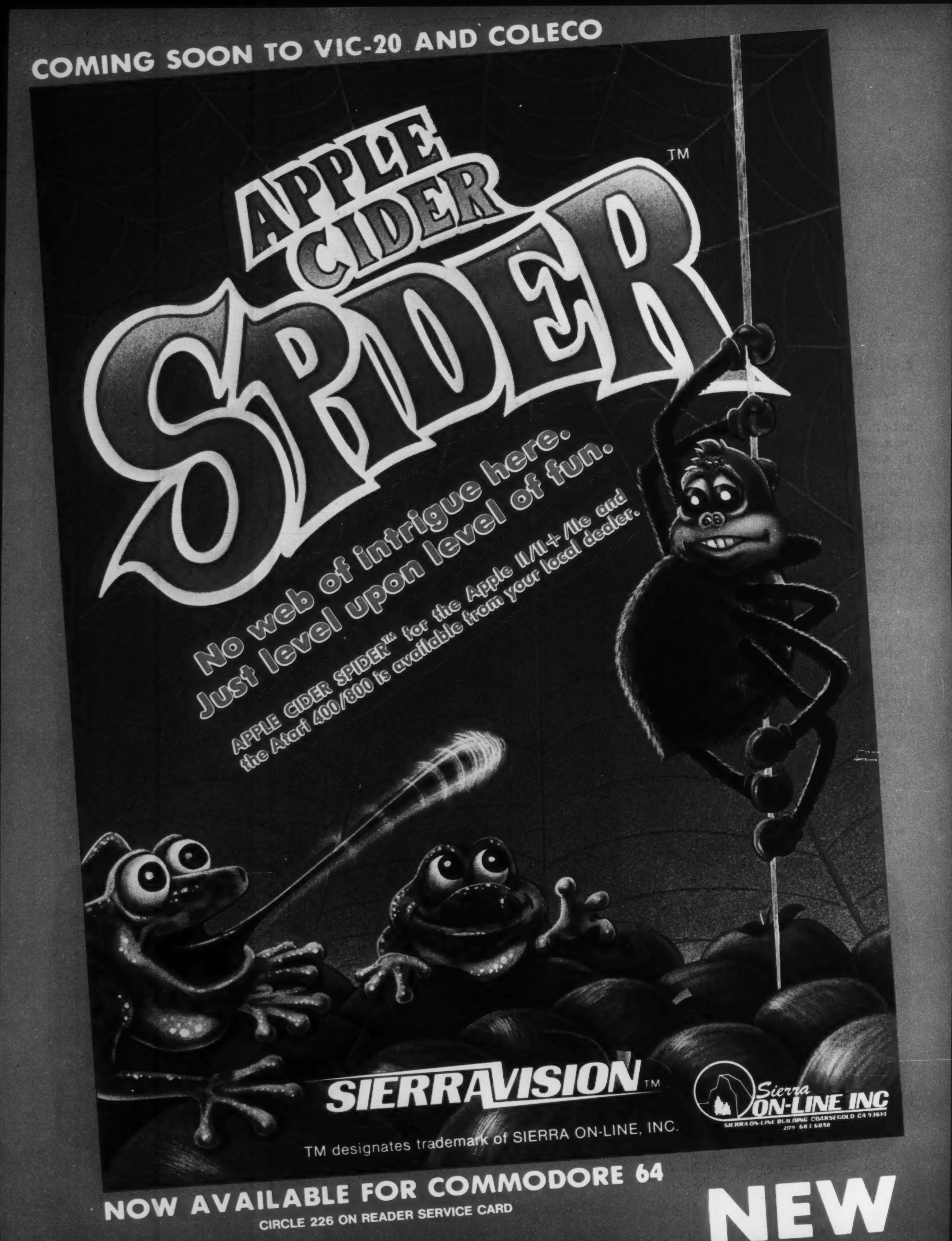
Brian J. Murphy, 133 Post Rd., Fairfield, CT 06430.



Epidemic.



Germany 1985.



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days to show results, by which time the disease may be out of control.

When all else fails there is the ultimate weapon; you can nuke an entire region. This is the indicated therapy when the disease is completely out of control, threatening to spread to other regions. Of course it is wrong to nuke heavily populated areas because, after all, carnage will be appalling—and counts against your game score.

The weapons to use against those pesky meteors are your nuclear missiles. During each turn you have to choose, when exercising your limited number of options, between curing the sick and firing at incoming meteorites.

There are four levels of difficulty which you may choose at the beginning of the game, each requiring its own strategy for victory. The shortest scenario, Level 4, is playable in from 20 minutes to a half-hour. Level 1, the hardest scenario, is playable in an hour. At Level 1 you have eight meteors on the radar screen and you start with a significant portion of the world infected. In Level 4 the situation is less complex and more easily managed.

The game system is easy to master, and play is smooth. On-screen prompts and menus are clearly presented and the game moves along very quickly. The graphics are colorful and well designed. The disk offers a game save feature and there is a utility for formatting blank disks as game savers.

The documentation is entertainingly written and supports the program well, but even without the manual and player aid cards, a first time gamer stands a good chance of picking up the rules just by booting the disk and following the prompts. Who ever thought the end of the world could be so much fun?

Germany 1985

Another, more realistic, scenario for the end of the world is advanced in the first two games of the SSI When Superpowers Collide series, *Germany 1985 and RDF 1985.* These games simulate a war in the near future that begins with Soviet invasions of central Germany and the Persian Gulf oil fields of Saudi Arabia.

In *Germany 1985,* you may choose two-player or solitaire action in two scenarios: Advance to Contact and Invasion. Units for the NATO side include battalions of tanks, armored personnel carriers (APCs), self-propelled artillery, air cavalry, and engineers. The Russians have battalions of tanks, APCs, artillery, rocket firing Katushka trucks, infantry, and engineers.

creative computing

SOFTWARE PROFILE

Name: Germany 1985
Type: Wargame
System: Apple II, IIe, III
Format: Disk
Language: Assembly
Summary: NATO vs. Warsaw Pact in ultimate showdown.
Price: $59.95
Manufacturer:
Strategic Simulations, Inc.
883 Stierlin Rd.
Building A-200
Mountain View, CA 94043

When the computer is playing the Russian side, the NATO player can expect rough handling. No matter which of the three levels of difficulty you select, the Russians will use their superior numbers in tanks and artillery to maximum advantage. This is no game for inexperienced wargamers. Even advanced players will need all their skills to avert a crushing Russian victory.

In the Invasion scenario, the Russians must seize vital river crossings from the NATO defenders: On the west bank of the river that divides the hi-res color battle field is a major airfield and several cities and villages. To win the game, the Russian side must occupy as many of these objectives as possible.

In the solitaire mode, as the game begins, the NATO player's forces are automatically deployed by the computer to guard the two major bridges at the top and center of the battlefield (in the two-player mode, the NATO player deploys his forces manually). In the first turn only an advance guard of Soviets advances onto the battlefield. In the third turn the Soviets outflank your river defenses, with forces entering the battlefield from the south-central edge, west of the river.

If your forces seem inadequate to the task of turning back this attack, they probably are. NATO's major reinforcements do not arrive until about halfway through the game (the game lasts from 20 to 22 turns). Your job is to keep yourself in the ballgame, with as few units as possible destroyed, until reinforcements can appear. Even then, taking back all the real estate the Russians have captured is a Herculean task.

In the Advance to Contact scenario, the NATO and Soviet armies enter from oppposite edges of the battlefield. The major objectives are the village squares and the lone airfield. With no major rivers for the Soviets to cross on this

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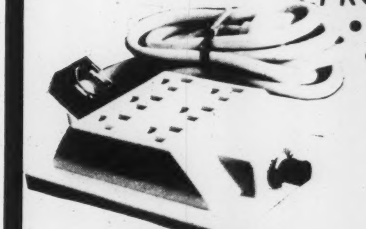

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SSI, continued...

battlefield NATO plays with no natural moat to delay the enemy advance, as in Invasion.

The battlefront is fluid, with the enemy units, as directed by the computer, probing for those sectors which you have had to leave lightly defended because of your limited numbers. The NATO player will find it very hard to dam the massive Soviet armored flood.

If this is what an actual Soviet invasion of West Germany would be like, we are all in real trouble.

RDF 1985

creative computing
SOFTWARE PROFILE
Name: RDF 1985
Type: Wargame
System: Apple II, IIe, III
Format: Disk
Language: Assembly
Summary: Highly realistic, complex struggle for Arab oilfields.
Price: $34.95
Manufacturer:
Strategic Simulations, Inc.
883 Stierlin Rd.
Building A-200
Mountain View, CA 94043

RDF 1985, the second game in the Superpowers series, shares a rulebook with *Germany 1985* (in fact, you have to have the *Germany* rulebook before you can play *RDF*). In this new scenario the United States Rapid Deployment Force is on its first combat mission—to halt a Soviet takeover of Saudi Arabia's Persian Gulf oil fields. The important difference between *Germany* and *RDF* is that in *RDF* the good guys have a better chance at winning.

There is only one scenario, but you can play it in two-player or solitaire mode and at varying levels of difficulty, depending on how many Soviet reinforcements you are prepared to face. The first US troops on the scene are air-dropped infantry. You may choose the drop zones yourself or let the computer assign them automatically.

Once your men are on the ground their first job is to grab an airfield—part of your reinforcements will need that airfield. Next in importance is to capture all the towns, oil fields, and airfields you can safely occupy. Remember that all these objectives are considered in Soviet possession until you overrun them, and the number of these objectives you hold determines who wins.

Finally, you must gain control of seacoast squares. Half way through the game the Navy arrives with reinforcements, but they can't land them unless you control a section of the seacoast.

The game system, designed by Roger Keating, is very elegant and makes good use of the capabilities of the Apple as a wargame simulator. Single key and CONTROL/key commands move a cursor around a map made of 1092 squares. The fine high-resolution color graphics system provides a very good simulation of both horizontal and vertical scrolling.

The command system is complex and elegant. To select a unit for command you place the cursor over the unit, and key M for move. Now you have several options. You may change the mode of the unit to prepare it for combat, defense, attack, support fire, or to regroup. You may move the unit, with distances varying according to mode. Moving a unit next to an enemy initiates combat. If the enemy is in sight, you may opt to call in tactical airstrikes.

Germany and *RDF* come closer than any wargames I have seen to being fully automatic. The game control system can automatically cycle round to each unit,

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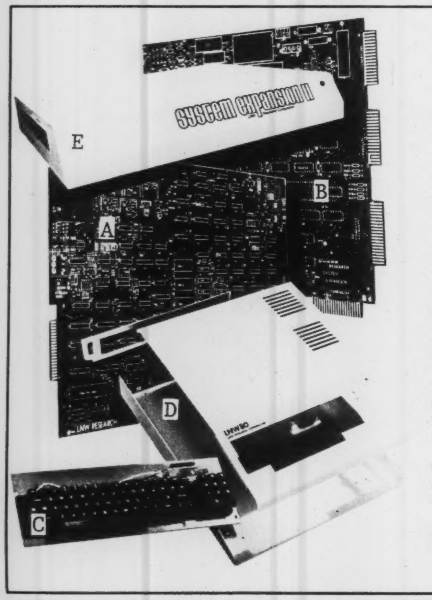

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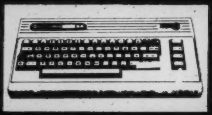

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eliminating the possibility of your forgetting to move one. Units can be ordered to automatically move and fire, head for predesignated locations on the battlefield, and occupy villages and other objectives. This takes much of the work out of wargaming.

Another nice aspect of this game system is the realistic way that combat is handled. When your forces collide with the Soviets, a complex formula for determining the outcome of the ensuing combat is applied. The factors which influence the battle result include how many enemy units are in sight of yours (and can fire on you), your strength, the enemy's strength, how the two sides use the terrain, and the mode the unit was in when attacked.

As elegant and realistic as this game system is, it is hard to remember all the things you must be doing—or could be doing—to win the battle. The difficulty is compounded by a beastly rule book for *Germany 1985.* It will take several readings for you to acquire a firm grasp of the rules (Hint: if you play the sample turn you will learn faster).

Germany 1985 and *RDF 1985* are *not* right for first-time wargamers. Even experienced wargame buffs would be well advised not to take them lightly. Once you have mastered the game system, however, you are in for one of the most formidable wargame challenges you are likely to experience—even if you give yourself a break and have the computer play the NATO forces while you command the Russians.

Bomb Alley

creative computing
SOFTWARE PROFILE

Name: Bomb Alley
Type: Wargame
System: Apple II, IIe, III
Format: Disk
Language: Applesoft
Summary: Monstrously large, realistic wargame.
Price: $59.95
Manufacturer:
Strategic Simulations, Inc.
883 Stierlin Rd.
Building A-200
Mountain View, CA 94043

The year is 1942, and even with Russia and the United States in the war, Adolf Hitler's dream of world conquest could still come true. His hopes are pinned on the Afrika Corps commanded by Field Marshal Erwin Rommel, the master tank commander known as The Desert Fox. Standing in his way to the Suez Canal and an eventual linkup with the Japanese is the British Eighth Army and an island sitting astride Rommel's air and sea supply lanes—Malta.

In Gary Grigsby's *Bomb Alley,* the Axis player has one important job: to keep British convoys from resupplying their "unsinkable aircraft carrier," Malta. In this monster-sized naval/air strategic-level simulation the players have at their disposal virtually all of the ships and planes which took part in the actual campaign between June and late August, 1942. The Axis player commands over 150 ships, from cruisers to motor torpedo boats. The British player has a similarly diverse collection, numbering over 160 vessels.

The game control system is essentially the same as used in Grigsby's other "monster" game, *Guadalcanal Campaign.* Each player may have as many as eight task forces on the map at any time on a variety of missions including bombardment (to support—or attack—invading Nazi ground troops on Malta), transport, combat, submarine, emergency resupply and evacuation.

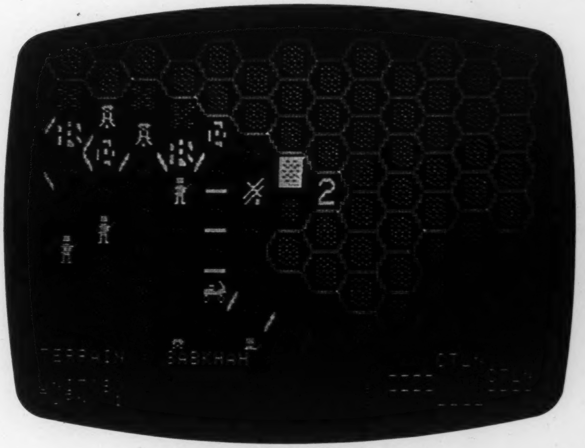
Waves of bombers pound ships and shore installations. Other planes are used to search for enemy convoys. Submarines lurk in the waters through which the enemy must pass. British convoys of transport ships are heavily escorted by cruisers and destroyers, intended to draw the bombers and subs away from the transports.

The key to the game is the proper use and conservation of air power. The planes simulated in *Bomb Alley* represent a wide range of the many types flown during the war. The Axis player intercepts British bombing missions with high performance Messerschmidt Me 109 fighters. The British player counters with nimble Spitfires. Alongside other classic planes like the deadly Ju87 Stuka divebomber, the Do17 bomber and the Ju52 trimotor transport are such lesser known planes as the Fairey Fulmar, the biplane Swordfish torpedo plane, and the deadly Italian bomber, the SIAI Marchetti SM 79.

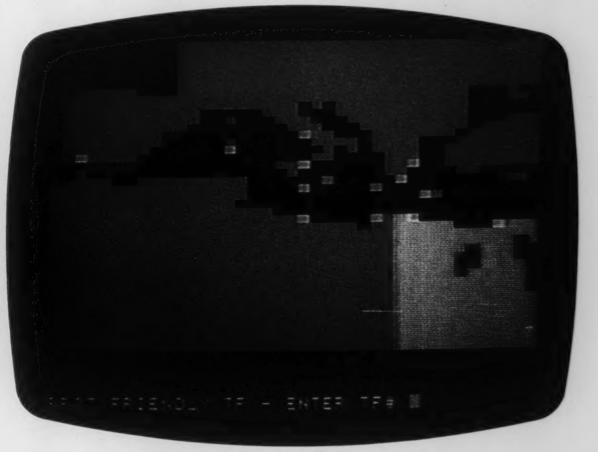
The action in *Bomb Alley* is fast and complex. Unlike *Guadalcanal,* in which combat is infrequent (carrier task forces spend many game turns in harbor refitting and reforming, reflecting the way the real campaign was fought), *Bomb Alley* offers combat almost every turn.

The main campaign scenario is 164 turns long, covering the period from June 11 to August 31, 1942. That is a formidable gaming challenge in itself. For those with less time and patience, there are two shorter scenarios. One is a re-creation of the last-ditch attempt to resupply the island, "Operation Pedestal," the other is a re-creation of the German invasion of Crete.

The strong point the three scenarios



RDF 1985.



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share is realism. They faithfully recreate the strategic choices the commanders faced and the dilemmas they had to resolve. The ships and the planes all perform according to historical fact. Add to this the non-stop action and you have a formula for great strategic wargaming.

Computer Ambush

For those who want to avoid the problems of the high command, who like to look at wargaming from the point of view of the average grunt, the reappearance of Ed Williger's *Computer Ambush* should provide delight. This vastly speeded-up new version is a re-creation of squad-level combat, set in 1944.

To refresh your memory, the game begins with a squad of U.S. infantrymen attacking a French village, led by tough top Sergeant J.C. "Buck" Padooka—the kind of guy who makes Sgt. Rock of Easy Company look like a sissy.

Padooka's instincts tell him that hidden somewhere in that village is a squad of tough Wehrmacht veterans. He is right. It turns out that hard-bitten Feldwebel Kurt Reich's squad is ready and waiting for the *Amis.* Reich is no Nazi, but he is a real pro; he defends that village as if it were his own front yard.

In this simulation, if you play one of the five solitaire scenarios, the computer does the decision-making for the Germans. Your job is to try to figure where, in that maze of half-ruined buildings, Reich had concealed his squad. Your job is to ferret them out.

The human tools you have to work with vary in quality to say the least. Each of the ten men in the squad has a distinctive personality, as revealed in the dossiers provided in the rulebook. With some careful reading and a little practice, you learn how you can use their human strengths and weaknesses to the best advantage in combat.

The movement/combat system seems bewildering at first, but with a little study and play experience it turns out to be exceptionally flexible.

Almost every move, every action in squad combat has been faithfully recreated. The men can walk, run, crawl, dodge, fall down, or stand up. They can move in a straight line or dodge, sneak cautiously or run at full tilt. They can fire automatic weapons and rifles, plant explosive charges, or lob grenades. In hand to hand combat the men can use their knives, bayonets, and garrottes. You provide the tactics—and experience the tension of combat—yourself.

When *Computer Ambush* first appeared, *Creative's* reviewer (Nov. 1980) praised it for its realism but observed that the program consumed about 30 minutes of computing time per game turn to resolve movement and combat. Plastered prominently on the cellophane wrapper of the new version is the notice

creative computing
SOFTWARE PROFILE

Name: Computer Ambush (2nd Ed.)
Type: Squad-level wargame
System: Apple II, IIe, III
Format: Disk
Language: Assembly
Summary: Vastly improved classic game of small arms combat.
Price: $59.95
Manufacturer:
Strategic Simulations, Inc.
883 Stierlin Rd.
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that the game plays "40x Faster," a claim which I have verified.

Key parts of the program were rewritten in assembly language, and a program bug discovered when the complaints started to roll in two years ago has been eliminated, according to SSI. The result is that the movement/combat resolution which took a half hour of computing now takes a minute or less. It is an improvement that elevates *Computer Ambush* from a game for die-hard players only to its deserved status as a classic. (Die-hards please note: SSI will update your old *Computer Ambush* disk for $20.)

Galactic Adventures

Galactic Adventures, designed by Tom Reamy, is as far away from the nitty-gritty of real life warfare as you can get. It is a fantasy/role playing game which can be as simple or as complex as you like, depending on your mood of the moment.

As the game starts, you choose which species you want to be. Perhaps you'll choose to be a superhuman Wodanite, an elephantine Dulbian, a feathered Cygnian, or a mysterious Zorcon. You have seven species from which to choose, and each has its own special abilities and deficiencies. Fortunately, you get a chance to "accentuate the positive" by assuming skills in weaponry and in such fields as medicine, black hole engineering, linguistics, lock picking, and logic.

The next step is to buy some weapons and tools. These are obtainable at the market and the weapons shop, but at a price. Fortunately, you have 30,000 frilbees to spend on whatever you need. The important thing to remember is that you can carry only five items at a time.

creative computing
SOFTWARE PROFILE

Name: Galactic Adventures
Type: Fantasy/role playing game
System: Apple II, IIe, III
Format: Disk
Language: Machine language/Applesoft
Summary: Endlessly versatile, entertaining role playing game.
Price: $59.95
Manufacturer:
Strategic Simulations, Inc.
883 Stierlin Rd.
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Once you are equipped, the next step is to set out for the streets of the city to recruit a band of hardy adventurers who will follow you wherever you go—provided you pay them on time. Sometimes, during recruitment, prospective fellow adventurers will attempt to eat you for dinner or attempt to tear you limb from limb. Try not to let this sort of thing disillusion you as you dodge laser sword thrusts and disruptor bolts.

With your band of heroes recruited, it is on to training. Gaining combat experience is important, and setting upon an outnumbered and underequipped band of aliens is as good a way as any to get it. Besides, if you win, you can look forward to the always entertaining tradition of looting your victims.

Before combat, the game system sets up a color battlefield on which you will meet your opponents. Symbols on the battlefield represent you and your opponents and tip you off as to their armament and armor. Obstacles on the field which block your line of sight, however, can make your enemy disappear temporarily. Never fear; a few battles and you will have learned how to use long range weapons like the Gemstone and phasor rifles and how to win hand-to-hand using a laser sword or a vibro knife.

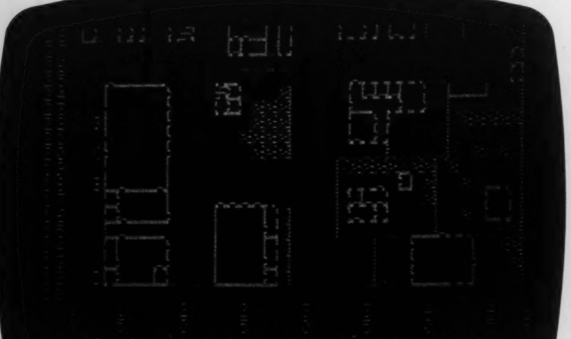
Another form of training comes as you complete various jobs offered by creatures you encounter in the streets. These jobs require your non-combat skills. Fascinating jobs you will be offered include star piloting, noetic logic, linguistics, cyborg jockeying, and gunnery. Each successfully completed job raises your skill level and fattens your purse; each bungled contract results in a heavy fine.

When you and your fellow adventurers are ready, you can visit one of the guilds for an assigned adventure. The job may include interstellar combat, a battle with aliens on their own turf, or another mission equally as dangerous and potentially profitable.

The capacity of *Galactic Adventures* for new adventure experiences is virtually endless. You can spend an evening ambushing citizens, running cargo or passengers through hyperspace, battling Banshees, or solving logic puzzles.

You also have the option of creating your own adventure scenarios. You can build your own battlefield, pick your enemies, and decide what treasures will be won.

Echoes of science fiction writers like Larry Niven and Fred Saberhagen are found throughout this creative game, but the most important influence is that of your own imagination. Unlike some role playing games, there is no final goal or prize to be won. You win by staying alive and by attaining your own personal goals. The world of *Galactic Adventures* is what you make it. With a good imagination, it can be a most fascinating place, where you will spend many happily violent hours. □



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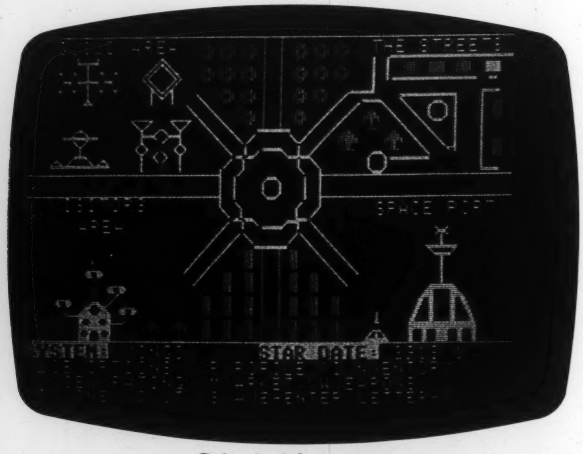

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An Avalanche From Avalon Hill

Brian J. Murphy

Unjustly accused of mutiny and the murder of his captain, Joe Justin, the second officer of the G.F.S. Rheingold, has been cast adrift. Clad in a recycled spacesuit and carrying a hand thruster, he must make the vastness of space yield up a ship to carry him to distant worlds where, he hopes, he will find the means to restore his good name and avenge the wrong which has been done to him.

This is the situation at the start of an exciting all-text adventure game, *G.F.S. Sorceress*, written by Gary Bedrosian, Lee Elmendorf, and Richard Christie for Avalon Hill. *Sorceress* is one of a group of new games which demonstrate that AH is now a force to be reckoned with in the field of recreational software.

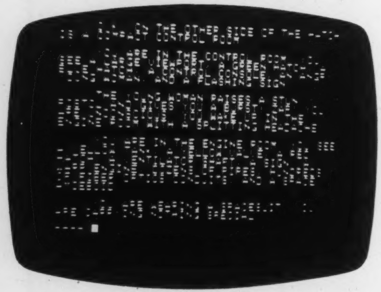
AH was an early entrant in the computer gaming field, but their initial productions, such as *B-1 Bomber* and *Midway Campaign,* were disappointing given Avalon Hill's enviable reputation in the realm of conventional board wargames. The early AH games lacked color and were less engrossing than the company's experience in game design warranted.

With Avalon Hill's newest games, we discover that the company has learned much about software design, especially in terms of what the market expects for its dollar. The result is a group of very playable games at good prices.

G.F.S. Sorceress

G.F.S. Sorceress, as mentioned above, is a *Zork*-style adventure game. Like *Zork,* it really doesn't need graphics because the play-value is the thing. As you start out, you are adrift in space, equipped with only a hand thruster. Your only clue as to what your next action should be is a thin ion trail which leads who knows where?

To tell you much more would be to give away the game. You command the action using two and three word commands like "follow path," "eat red apple," or "examine room." Note that you can use a modifier to specify which of the objects you are interested in, as long as you follow the form verb/modifier/noun in creating your commands.



creative computing
SOFTWARE PROFILE
Name: G.F.S. Sorceress
Type: SciFi adventure game
System: 48K Apple II, TRS-80, 48K Atari
Format: Disk and cassette
Language: Machine language
Summary: Highly entertaining all-text adventure.
Price: $35 disk; $30 cassette
Manufacturer:
Avalon Hill
4517 Hartford Rd.
Baltimore, MD 21214

The object of the game is to clear the name of your character, Joe Justin. In a short story provided with the game, "Restless Universe," the events which led to Justin being marooned in space are laid out in detail. The captain of the G.F.S. Rheingold has been murdered, probably by the ship's ambitious first officer, Commander Bernard Taub. Taub manages to frame Justin, manufacturing convincing evidence that it was Justin who killed Captain Wu.

Throughout the very readable "Restless Universe" are many clues which, if you are clever, will help you to overcome the obstacles and puzzles you find on worlds across the galaxy as you try to clear your name. Be prepared to repair spaceships, explore alien environments, battle monsters, and most importantly, to use your imagination. As with the best adventure games, *Sorceress* requires that the game player be on the lookout for the twist of logic which will yield the right command to solve the problem at hand and enable him to progress.

The level of challenge is not as mind-boggling as *Zork* or *Zork II*, but *G.F.S. Sorceress* is a legitimate test of an adventure gamer's skills and imagination. I have always thought that adventure games like *Zork, Cranston Manor,* and now *Sorceress* are among the best values on the software game market because of the many hours of entertainment you get for your dollar. *Sorceress,* like the others, lets you save your game on a scratch disk, allowing you to quit the game and

---

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T.A.C. is a game of World War II tactical armored combat. **You** pick a nation (from among the four major combatants—Britain, U.S.A., Germany and Russia). **You** build a combat team from their most powerful tanks, assault guns and tank destroyers. **You** command the team you've created in major operations against like forces of the enemy.

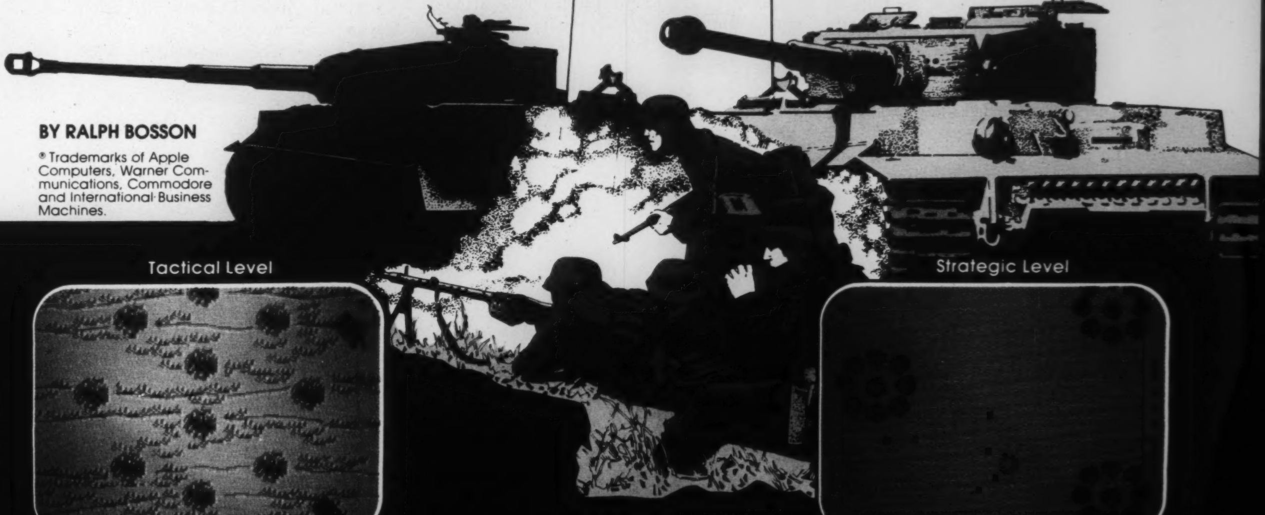
All the famous vehicles of the second world war are here—Tigers, Panthers, Shermans and JS II's; Jagdpanthers, SU 152's, Fireflies and T 34's, just to name a few. They have all been thoroughly researched and their important features programmed into the game. Each vehicle is distinguished by such elements as armor thickness (rear and flanks as well as front), fire power, speed, acceleration and gun traverse. Even minor points like fuel tank location can be critical.

The computer handles all the technical details. This lets you concentrate on making the same kinds of decisions the real-life tank commanders made. You search for the enemy, set your speed, aim your gun and knock out the enemy. The computer will handle all the rest.

Here are just some of the exciting features:

- **T.A.C.** can be played solitaire against the computer or as a two player (or two team) game with the computer as mediator.
- The most important armored vehicles of Britain, Russia, U.S. and Germany are available to command—40 in all.
- Choose from five different scenarios to play. Actions range from open meeting engagements to assaults against prepared positions.
- You pick the sides. You choose the weapons. A simple purchasing system has been provided to let you "buy" what you want in balance with your opponent.
- The results of combat are determined by the computer. It factors such critical elements as range, armor thickness (front, rear and flanks), tracking time, the speed and maneuvers of both the firing and target units, visibility and weapon adjustment to determine weapon accuracy.
- Special options include hidden movement, improved positions, smoke mortars, minefields, close assaults, overruns and indirect fire.

T.A.C. on diskette retails for $40.00 and can be played on the following computers: Apple® II's with 48K (Mockingboard™ Sound Enhanced!), Atari's® with 48K. Commodore® & IBM® versions coming this fall.



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CIRCLE 115 ON READER SERVICE CARD

pick it up again when you please without having to retrace all previous steps. Thus, you can stretch out the pleasure for as long as you like; and with *Sorceress,* there is a great deal of pleasure to be had.

VC

The more of the enemy you kill, the more there are. You have the firepower, the helicopters, the artillery, and Victor Charlie has the jungle and the night. In the dark he moves among the people, and with political and military force he coerces them to join his side. In the morning more hostile eyes are watching you from the jungle, waiting . . .

VC is Avalon Hill's sole wargame in this new quartet, and it may be the best introduction to computer wargaming I have seen, skillfully blending the animation and sound effects of an arcade style game with the challenge of a conventional strategy game.

As the game begins, you have 12 fighting units at your disposal, a U.S. Air Cavalry unit, an artillery unit, and ten ARVN (Army of the Republic of South Vietnam) units. Surrounding you is the civilian population—what Mao Zedong called the sea in which the guerrilla swims. And in that sea, disguised as neutral civilians, is the enemy. There can be as many as five units of the regular North Vietnamese Army and many more units of the Viet Cong. Your job is to eliminate these enemy units while "winning the hearts and minds" of the civilian population before they are killed or recruited by the communists.

On the screen you see a set of blue shapes clustered together. The numbered shapes are the ARVN units, the helicopter is the US Air Cav unit, and the remaining shape is the artillery. All around you are the people, in green. A few of them are the enemy, but don't go firing your artillery into them at random. When you do, you lose their hearts and minds and make it easy for Victor Charlie to recruit them.

You can move one infantry or Air Cav unit per turn. As the ARVN infantry moves, it recruits friendly civilians. They don't fight for you, but as they are recruited, they turn blue and are flagged with an F, which makes it easier to tell friends from neutrals and enemies. As your ARVN units move out into the countryside, more and more of the peasantry will rally to the Allied cause.

creative computing

SOFTWARE PROFILE

Name: VC
Type: Warfare simulation
System: 48K Apple, 32K TRS-80, 48K Atari, 48K IBM
Format: Disk and cassette
Language: Machine language
Summary: Could win your heart and mind
Price: $25 disk; $20 cassette
Manufacturer:
Avalon Hill
4517 Hartford Rd.
Baltimore, MD 21214

In the meantime, invisibly, the computer is moving the VC and NVA units in precisely the same manner, recruiting and coercing the peasantry to the communist cause. The difference is, although your friends are easily visible, the computer conceals from you which of the people have gone over to the other side. What you do see is a flicker where the enemy is moving. You will also spy perfectly innocent shifts in the civilian populations, so hold your artillery fire.

This is where the Air Cavalry comes in. The Air Cav unit can move to any open square on the board. It will search the adjacent eight squares around the landing zone and identify any enemy units. The Air Cav has a good chance of destroying them on the spot, because its strength is five times that of a regular ARVN unit. If the Air Cav or ARVN unit engages the enemy but fails to destroy the enemy unit during the turn, the unit is marked by a white symbol. The symbol remains on board, allowing you to shell it with your artillery to your heart's (or mind's) desire.

The challenge of the game is in getting ARVN units out into the countryside fast enough to head off VC recruitment. You can't always see where the enemy is. It is possible that he could be sneaking behind you, poised to kill the peasant units with which you have made friends. He might also be hidden in a dense cluster of civilians, by his very presence rallying them secretly to his side. At the end of the turn, after you have killed six enemy units, it is dismaying to find that his total strength is now three higher than it was the turn before, according to your turn-by-turn intelligence report.

What is even more dismaying is to watch the numbers of civilians in your province drop from the initial count in the low hundreds to the sixties or fifties. When more than half the original number of civilians has been killed or recruited by Victor Charlie, you lose. You can win only if you kill off all the communist units without having to kill more than half the population. If VC is recruiting faster than you are killing (or winning over), you lose.

In a way, this game is like the real Vietnam War. Victory seems only a tantalizing step away. You have the men and the firepower, but the more you kill, the more of the enemy there seems to be. It is up to you to break this vicious cycle, and you might find it just as difficult a chore as it was for our military brain trust in the 60's and early 70's.

One thing seems certain, that tantalizing glimpse of a light at the end of the tunnel will bring you back again and again to *VC*. So will the graphics. Everything the early Avalon Hill games didn't have, this game has, including amusing sound effects and smooth animation.

VC is an easy game to learn. Unlike some war games, the instructions take only a few minutes to read and absorb. On-screen prompts and a simplified grid system help speed play along.

In its TRS-80 incarnation, which we did not playtest, the graphic shapes are replaced by letter codes for the various counters in the game. This is the only real difference.

Andromeda Conquest

Andromeda Conquest, its flashy title page notwithstanding, is a visually unexciting game of interstellar colonization and warfare. The game is played on the strategic level. Each of as many as four players begins the game with one planet which produces ten resource units.

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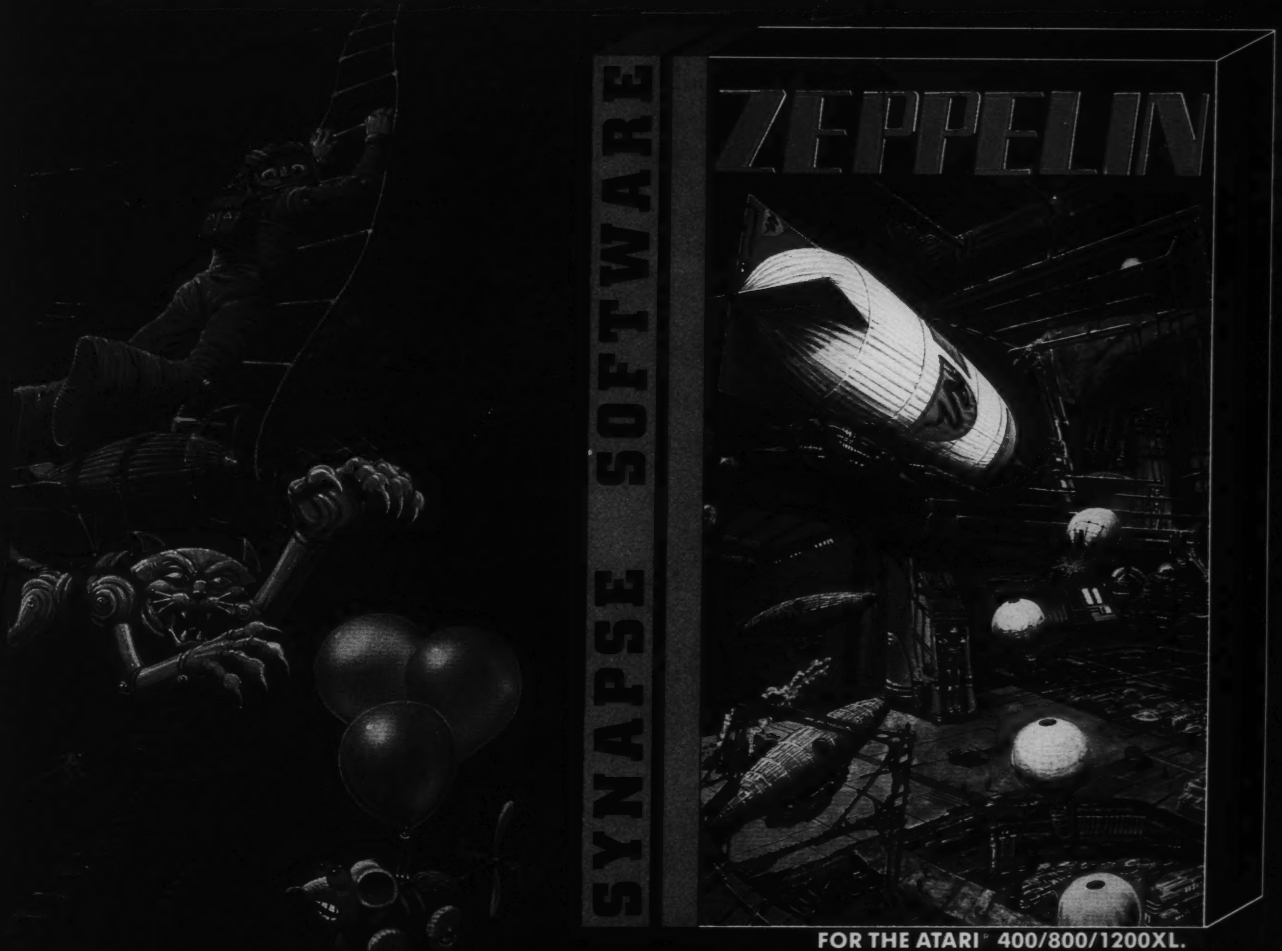

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You can use the units to buy Echo ships, needed for colonization; Rama ships, nimble long range fighters; Nova ships, battle-wagons with planet-busting powers; and defense units for the planets in your empire.

Depending on how many players there are, there will be from 12 to 48 stars in the "galaxy" from which you must seize 10 and control them for an entire turn sequence. During each turn, the computer displays the number and type of ships available to you and lists the planets in your empire, including their resource points and defense factors.

If you have maneuvered a fleet to a distant star and have subdued all opposition, you are then given the chance to spend some of your resource points to colonize it. Once part of the empire, the resource points produced by the planet are added to your total at the beginning of the turn, increasing your spending power.

In the solitaire version, this is more or less the whole game. The natives might put up perfunctory resistance, but the program does not generate any alien fleets to oppose your juggernaut. It is in play with two or more opponents that the action heats up.

creative computing

SOFTWARE PROFILE

Name: Andromeda Conquest
Type: SciFi strategy game
System: 48K Apple, IBM PC, TRS-80, Atari, Pet
Format: Disk and cassette
Language: Basic
Summary: Grab a hatfull of stars . . . if you can
Price: $23 disk; $18 cassette
Manufacturer:
Avalon Hill
4517 Hartford Rd.
Baltimore, MD 21214

After you have finished the resource allocation phase of your turn, you are given control of your fleets. When you buy a fleet, you may launch it from any planet of your empire, even one that is under attack, thus making it very hard to seize a colonized planet.

When in the fleet command phase, you can summon tactical maps of the sector of the galaxy your fleet is in. These text-generated maps—there are absolutely no graphics after the title page—display an A wherever enemy fleets are located and a number for each of your own armadas.

When fleets clash, there are no tactical level decisions to be made. You can choose to either attack or do nothing. If you choose to attack, which is usually the right choice if you get to shoot first and have used only a little of your fleet energy to move into position, the computer does all the messy calculating of odds and automatically displays the results.

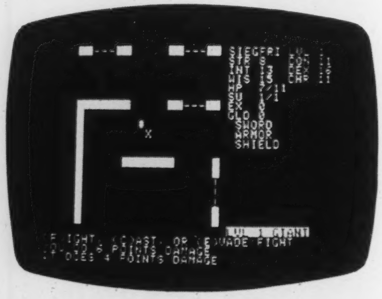
The accent is not on subtle nuances of play, but on broad strategy and action.

Andromeda is a game you will pick up quickly. The accent is not on subtle nuances of play, but on broad strategy and action. The level of challenge is low, but the playability is high, with the exception of the solitaire mode, which is frankly dull. For three or four players, *Andromeda Conquest* is a good evening's entertainment.

Telengard

Last, and best of the AH quartet is an exciting fantasy-adventure game, *Telengard,* the creation of Dan Lawrence and Mike O'Brien. The graphics in *Telengard* are, to say the least, rudimentary. All you have is an X marking the spot in the maze at which your character is located, letter codes for certain features like fountains and altars, and # symbols to indicate the presence of monsters. It is a good thing that the action is fast and furious enough to make you forget about the graphics.

At the beginning of the game, you select a set of characteristics for the character you will take into the maze. The categories are fairly familiar to fantasy-gamers: charisma, agility, wisdom, intelligence, strength, and most important, constitution (the measure of how much punishment you can take before you die).



```
SIEGFRI LVL 1
STR  8  CON 11
INT 13  DEX 16
WIS 15  CHR 11
HP  7/11
SU  1/1
EX  0
GLD 0
 SWORD
 ARMOR
 SHIELD
LVL 1 GIANT
(F)IGHT, (C)AST, OR (E)VADE FIGHT
YOU DO 6 POINTS DAMAGE
IT DOES 4 POINTS DAMAGE
```

It would be nice if you could decide how strong your character will be in each category, filling categories one-by-one, but right from the start *Telengard* puts you on notice that you are in for rough handling. A completed set of characteristics flashes on the screen as soon as you select the Start a New Character option. You have exactly three seconds to take the characteristics or leave them. If you decide you don't like the setup, you do nothing, and a new set of characteristics flashes on the screen. When you get to a set you like, you hit RETURN and the game begins. At the beginning, each characteristic such as wisdom, strength, etc., can have a value as high as 18. The ideal would be to have each field showing a value of 18, but the chances of the computer randomly assigning that value to all six characteristics are not good.

Once you have settled on a character and have named it, the game begins with your hero standing at the foot of a staircase leading up to the Worthy Meade Inn. A quick glance at the upper righthand quarter of the screen shows the status of the character in all six characteristics and the number of accumulated experience points, gold, spell units, weaponry, armor, and possessions.

creative computing

SOFTWARE PROFILE

Name: Telengard
Type: Fantasy/adventure
System: 48K Apple, TRS-80, 48K Atari, Pet CBM
Format: Disk and cassette
Language: Basic
Summary: An amazing fantasy game.
Price: $28 disk; $23 cassette
Manufacturer:
Avalon Hill
4517 Hartford Rd.
Baltimore, MD 21214

Those of you who have been through the fantasy game experience before don't have to be told that our fledgling hero begins at the first level of experience, with no experience points, no gold, and few spells. At first our hero has only one spell unit, good for the hurling of one Level One spell. He has a sword, shield, and armor, but all are of the very lowest quality.

The object of the game is simply to stay alive and accumulate experience and gold and to be prompted to higher levels. How far you can take your character is a measure of how much

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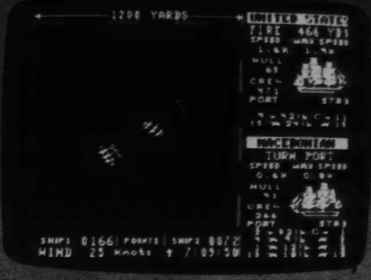
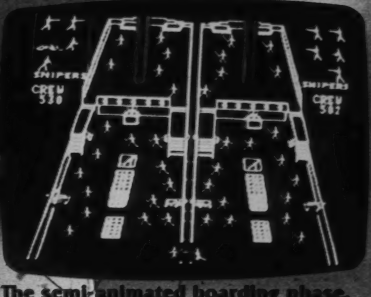
If you want to design your own ships, **BROADSIDES** lets you build frigates and ships-of-the-line from the keel up, rigging them, manning them, and arming them with everything from 12-pounders to hull-smashing carronades.

The enemy's guns have been rolled out, his sharpshooters are in his tops, and he's almost within range. The battle is about to begin.



Your ships move faster than real-time on the Hi-Res color screen.



The semi-animated boarding phase.

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Avalanche, continued...

gaming savvy, luck, and skill you can bring to bear and in what proportions. As you begin at the highest and "easiest" level of the 50-level maze, you may face at any time a monster capable of easily destroying you with one blow. It is, therefore, necessary to accumulate experience rapidly; to acquire healing potions to renew hit points; scrolls of rescue to get you out of unpleasant neighborhoods; and magic swords and shields to help you absorb and dish out extra punishment.

It is a daunting chore. The first level costs 2000 experience points. The fifth level requires 32,000 points, and even at that level, with improved spells and more of 'em, you still encounter monsters on the first maze level that can wipe you out in a split second.

As the song says, you gotta know when to fold . . . know when to run. At first, you do a lot of running from monsters (you have the option to fight, cast spells, or evade when in combat) but as you achieve higher levels of experience and, perhaps, stumble upon magic swords, you will choose to fight more often.

As you explore the maze, you find treasure chests full of gold which can be converted directly into experience points at any inn, magic swords and even clocks which enable you to pass by monsters unseen, friendly monsters which give you gifts or restore hit points, magic fountains whose waters bring interesting results when drunk, misty cubes, altars, pits, elevators . . .

The dimensions of the maze system are large, indeed. Each of the 50 levels is so extensive that you will hesitate to attempt to map them. The temptation to navigate by the seat of your pants will be hard to resist, but if you expect to avoid stumbling upon a nasty surprise for the second time or to find the stairs going up, it's worth the effort to make a map.

Telengard almost automatically invites comparison with the more sophisticated *Wizardry.* It is by no means the equal of the more polished and challenging *Wizardry,* but *Telengard* has the great charm of being easy to play and offering fast-moving action. The complex setup procedures of *Wizardry*, the forming of adventuring groups, the equipment purchasing, and the freedom to tailor a character's characteristics to your desires are missing from *Telengard* as are the attractive color graphics.

What's left is the action, which is abundant, and the fun of exploration. AH has produced a game which makes a good introduction to the fantasy-adventure genre for new gamers. For veteran fantasy gamers, *Telengard* should provide a new kick and a respectable challenge of skill. ☐

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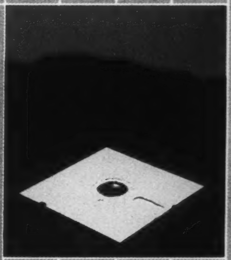

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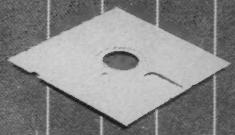

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Annie Ample, Captain Sticky, Jack Wayman (Sr. VP of Electronic Industries Ass'n), and Stickettes pose in front of the Datamost booth to promote new line of Captain Sticky games.

1983 Summer Consumer Electronics Show

David H. Ahl

The Consumer Electronics Shows have grown immensely important to the personal computer industry over the last few years. Hence, we had four editorial people (John Anderson, Owen Linzmayer, Ken Uston, and me) at the 1983 Summer Show. You'll be reading about different aspects of the show and about the new products introduced in various articles by the four of us.

I was the keynote speaker at the National Education Computer Conference which overlapped all four days of CES. As a result, I was able to get to Chicago for only the last two days of CES. This article, therefore, will only cover new computers, peripherals, and a smattering of software.

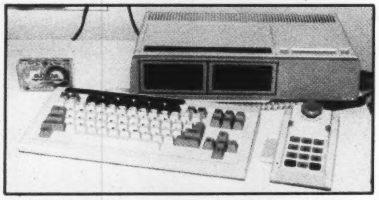
Home Computers

The story of the show, at least as far as the trade press and *The Wall Street Journal* were concerned, was the introduction of the **Coleco** Adam computer system. This is a complete system with 80K of RAM, full keyboard, tape storage, 80-column daisy wheel printer, and two game controllers. The software includes a word processing package, Applesoft Basic Interpreter, and game package. The system, incidentally, also plays standard ColecoVision games. The price is a mind-boggling $600 for the complete system, printer and all.

Not to be an old stick in the mud, but this system reminds me of many previous introductions that weren't quite ready and didn't quite make it. For example, the Ultravision system announced at the Winter CES completely disappeared six months later. Now I certainly don't expect this to happen to the Adam, but upon talking to some of the designers of the system, it was clear that the several prototypes put together for the show were anything but fully functional.

Apparently just a few days before the show, it was decided to replace wafertape drives with some sort of cassette termed by Coleco a "digital data pack drive," capable of storing 500K. The units at the show had wafertape-size openings, but nobody was opening them up, even when asked very nicely.

On the other hand, the printer technology is really clever. Instead of using a high speed motor to spin the daisy wheel and a microprocessor control circuit to stop it in the right place, Coleco uses a much slower but more accurate stepper motor that is cheap and doesn't need any extra control circuitry to stop in the right position. Also, the Adam printer prints only at 10 pitch (characters per inch) so Coleco was able to use cheap solenoids for the head advancement mechanism instead of the motors used in other printers.



Coleco Adam system appears to be a baby IBM PC.

Coleco promises delivery in August at the wholesale level so the product should be on retail shelves in time for Christmas. Given where they are now in the design and manufacturing cycle, the delivery dates seem to me exceptionally ambitious, if not downright impossible. Neverthless, when it arrives, it will be an outstanding contender.

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CIRCLE 272 ON READER SERVICE CARD

Real products that are available today are the computers from **SpectraVideo.** Along with the SV-318 which had been shown at Winter CES, SpectraVideo was showing the second member of the family, the SV-328. The main differences between the 328 and the 318 is that the 328 has a full-stroke 89-key keyboard with four cursor movement keys replacing the joystick at the right of the housing. It also has 32K of built-in user memory compared to 16K on the 318.

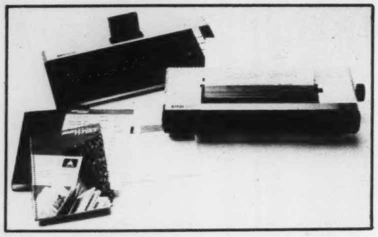
These are very impressive machines with extended Microsoft Basic, eight function keys, 16 colors and 32 graphics sprites, three sound channels of eight octaves each, 52 graphics characters available directly from the keyboard, two-channel data/sound cassette support, and CP/M compatibility. At $299, the SV-318 is an outstanding value.

A year ago, I said in my writeup of the NCC that I felt the most significant announcement was that Microsoft had signed contracts with four Japanese companies to put their operating system, Basic language, and other software on computers of these manufacturers. Taking this one giant step further was the announcement made a week after CES by SpectraVideo. In particular, the entire Japanese computer industry and SpectraVideo, an American/Hong Kong manufacturer, have agreed with Microsoft to adopt standards covering nearly all aspects of personal computer software—graphics, interfacing, program control, sound, and data storage.

This will make the 16 Japanese personal computer manufacturers along with SpectraVideo an extremely important force in the market. Indeed, other new entrants into the market will have an increasingly difficult time succeeding if they decide to go it alone and do not subscribe to this standard.

Atari was showing a complete new family of four "XL" computers which are fully described in John Anderson's article. They also were showing The Graduate, an add on computer for the Atari 2600 VCS game unit. The Graduate has a rubberized Chiclet-style keyboard (56 keys), 8K of RAM, Basic in a 16K ROM, and interface capabilities for additional memory, modem, printer, cassette recorder, and wafertape drive. Nine software packages were also announced in the areas of home management, education, games, and programming instruction.

The Graduate from Atari transforms the 2600 VCS into a full computer system.



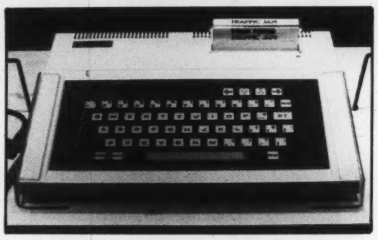
A low-cost word processing package built around the Atari 600XL.

Rabbit Computer, a small Hong Kong manufacturer, was showing the Rabbit RX83 for the first time. This is a low-end machine in the class of the V-Tech VZ200 and Mattel Aquarius. It uses a Z80A, has 2K of RAM built-in (expandable to 64K), 50 rubberized keys (no spacebar), uppercase only, and one-stroke Basic commands. It has good graphics capabilities with four graphics modes of operation, eight colors, user-definable graphics characters, and resolution of 256 x 192 pixels. Cassette speed is a respectable 1200 baud.

The Rabbit is a capable new low-end computer from Hong Kong, but alas, no spacebar.

One lovely piece of software was a Music Composer program which shows four standard staffs of music with notes during playback. The machine produces sound on three channels. A lot of power for $99.

Also at the low end, **Tomy** was showing the Tomy Tutor. We were unable to get many technical details and those that we got might be suspect. For example, the published specs list a 10 MHz cpu; hey, Tomy, there ain't no such thing. They also list 101 upper/lowercase keys, yet anyone could see by counting that the rubberized Chiclet keyboard had 56 keys. To its credit, it had a full spacebar. Resolution is 256 x 192 pixels or 32 characters x 24 lines of text.



The Tomy Tutor was being shown with an impressive line of software.

The Tomy Tutor has 16K of built-in RAM (expandable to 64K), 32K ROM with Basic and a graphics program. It has 16 colors and three sound channels. A full array of peripherals is promised along with an impressive software library, some of which was on display. At $150, it looks like a viable competitor at the low end.

Speaking of low end, **Video Technology**, previously in the very low end with handheld games and the VZ200, was showing some up scale computers and a very nifty four-color printer/plotter for the VZ200. Incidentally, in the rest of the world, the VZ200 is known as the Laser computer and it is now being renamed the Laser 200 for the U.S. market as well. The PP40 printer/plotter uses 4.6" width paper, but prints 26, 40, or 80 characters per line. It prints in black, blue, red, and green on standard roll paper. Since it uses a standard Centronics interface, it can be used with almost any computer, not just the Laser series. Price: about $179.

A middle range computer, still in the prototype stage, is the Laser 2001. This 6502-based system is dubbed the Multisystem since, with the appropriate adapter, it can run ColecoVision or Atari VCS software. It has a 16K ROM with extended Microsoft Basic, 64K of RAM, 256 x 192 graphics resolution, four channels of sound, and interfaces for joysticks, printer, and cassette recorder. No price as yet.

LASER
VZ200
LASER

The Video Technology VZ200 changed its name to the Laser 200.

The top of the line computer from V-Tech is the Laser 3000, an Apple work-alike system. Not only does the 3000 run Apple software, but it has many features not in a standard Apple. In particular, it

In the flash of one second, Delta-10 can print the alphabet six times.

At 160 cps, 100% duty cycle, Delta-10 is built for speed. It's the dot matrix printer that quickly strikes up an intense working relationship with your computer.

There's no nonsense. Delta-10 performs with serial and parallel interfaces as standard. The 8K buffer gives Delta-10 the power to instantaneously store and print data as it frees your computer to continue its job. Turn Delta on and it can print three crisp copies simultaneously at the continuous speed of 160 cps.

And Delta-10's performance isn't only measured in swiftness. There's the diversity of its character fonts, its true descender matrix, and its underlining ability.

Star's new Delta-10. Designed for red-hot efficiency. And isn't that what you need?

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delta-10
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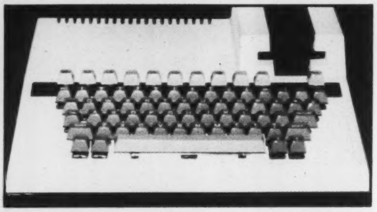
The V-Tech Laser 3000 is an Apple work-alike with many additional features.

has a 24K ROM, 64K of RAM (expandable to 192K), keyboard with 81 keys, eight function keys, built-in 80-column text display, 560 x 192 pixel graphics resolution, four sound channels, built-in Centronics parallel interface, TV sound, and RGB or composite video output. Wow! We can't wait to get one. No price as yet.

Another Apple work-alike is the Sonic computer from **Unitronics.** Unlike the Laser 3000, the Sonic is offering compatibility at the lowest possible price—reportedly under $300—and minimal extra features. The Sonic uses a TI video display processor chip for improved graphics. In response to Coleco, Unitronics rushed out an announcement at CES that memory capacity was being introduced from 48K to 84K (sounds strange to me; 84 isn't even a multiple of 16 or 8). It also has a single wafertape drive built in. Apparently software must be purchased from Unitronics as no disk capability was announced for the computer.



The Unitronics Sonic is an Apple work-alike with a wafertape drive.

Unitronics also announced inexpensive interface modules to connect the Sonic computer to the Atari VCS and ColecoVision games systems.

Another company with their sights set on Apple is the **Taiwan Happy Home Computer Company.** Their Multi-System personal computer is not only compatible with Apple, but with the IBM PC as well. This is a detached keyboard unit at an unbelievably low price ($350 wholesale for cpu and keyboard, $165 for disk drive, $65 for monitor), but the probability of it reaching our shores in any volume is practically nil.

Multi-System computer from Taiwan Happy Home Computer Co. is compatible with Apple and CP/M.

Portable Computers

NEC was officially showing its PC-8201 for the first time in this country (see Creative Computing, August 1983), but they were still not talking price other than to say it would be "competitive."

Casio was showing the FP-200, a notebook-size portable a la TRS-80 Model 100 but with click-style cal-

And Coleco Created Adam

I wished I could have parted the crowd as Moses parted the Red Sea. They were jammed into the 1000 square feet or so of the Coleco booth at McCormick West to get a look at the new creation. And they saw that it was good.

Ever since Coleco entered the video game race with its Colecovision gaming system, speculation has run high as to just how they would enter the highly volatile consumer computer market. They presented their answer, Adam, at the summer CES.

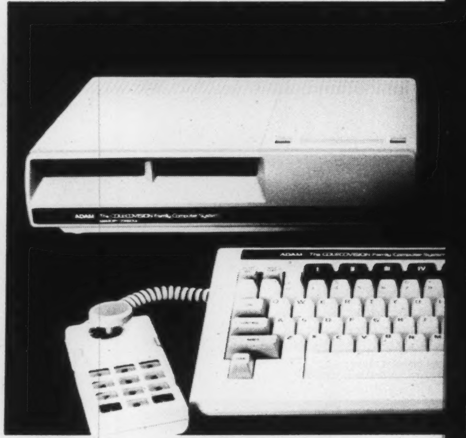
And it is a strong contender. Based on the same Z80 system that anchors the game system, the Adam comes with more standard features than any other computer in its class, and in many cases even out of its class. I fought my way through the crowd to get look at the thing—then blinked hard. There before me, rotating slowly in a tinted glass case, was what looked like a baby IBM PC, with a daisy wheel printer. This was Adam.

A word I heard a lot of that afternoon was "integration." Adam is an integrated system. There are two CPUs in the console, one in the keyboard, and one in the printer. All these components together constitute the Adam (see photo). Each can function independently or in communication with another processing unit or units. The result of this networking capability is the ability to do more than one job at a time, which in compuspeak is called "multitasking."

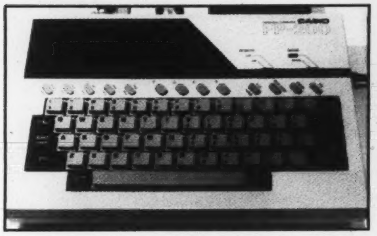
The Adam unit is shipped with 80K of RAM, expandable to 144K using an expansion module. A word processing program is resident in ROM, and works directly with the Smartwriter daisywheel printer. Of course Adam has a cartridge slot, and plays all Colecovision games. The entire system, with joysticks and a game cartridge, will be available for under $600.

No computer system is complete without some sort of mass storage device, and Adam has one. They call it the "digital data pack," and though it looks like a conventional audio cassette, it is not the same as cassette storage on an Apple, Atari, or TRS-80. Each specially engineered cassette is capable of storing 500K and works between 8 and 16 times faster than conventional cassette storage on other systems.

Each Adam comes with one built-in data pack drive, with room for inboard installation of another.



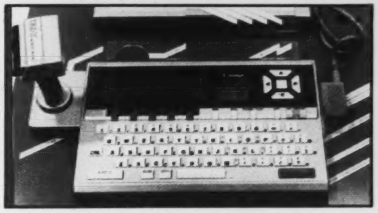
The 75-key keyboard is perhaps the most impressive component of the Adam computer. It looks very much like the detached keyboard of the IBM PC, right down to the coiled wire coming out the back. In some ways, it is even nicer than the PC keyboard. It is a Selectric-style keyboard, and includes special word processing command keys, along with directional cursor control keys. It also features six programmable "smart keys," which perform flexible functions within specific programs.



Casio FP-200 is similar to the Epson HX-20 but has a calculator-style keyboard.

culator keys and 8 line x 20 character LCD display compared to the 40-character width on the Model 100/NEC 8201. It has two programs built in, Basic and CETL (Casio Easy Table Language). CETL is a simplified spreadsheet (like VisiCalc) with a sort facility. The FP-200 is available in two memory sizes, 8K and 24K, and it has interfaces to a printer, cassette recorder, modem, and floppy disk drive.

Canon was also showing a portable about two-thirds the size of the Model 100, the X-07. It also comes in two configurations, 8K and 24K. The LCD display is four lines of 20 characters, the same as the Epson HX-20. However, it can also produce a 256 x 192 pixel display on a color monitor. Optional extras include a four-color graphic printer/plotter, optical coupler, thermal printer, and cassette recorder. No price announced.



Canon X-07 was being shown with an infrared coupler (left) through which two computers can communicate.

Not exactly a computer, but close, was the Quik-Link 300 videotex terminal announced by **Quazon Corporation**.

Quazon Quik-Link 300 is a low cost videotext terminal.

The unit has a flat membrane keyboard (like Atari 400 and Timex 1000) which seems to me less than satisfactory for typing entries into a database service. The dial-up procedures for four databases can be stored in the unit; one keypress initiates automatic connection to the service. The unit works with any TV set of good resolution. Price around $200.

Peripherals

Texas Instruments created quite a furor with their announcement of an "auto incrementing memory" GROM circuit which will be used in the TI 99/4A and soon-to-be-announced 99/4B and 99/8 computers. Basically, it means that software manufactured by outside companies will not run on TI computers. TI will cooperate with such manufacturers, for a price, so they can produce software for TI machines. Imagic announced such an agreement, but most other manufacturers with whom we spoke were not at all pleased with the arrangement.

In an effort to defeat TI's lock on the software market, **Romox** announced a

The Basic computer language is also provided with the Adam package. It is not ROM-resident, but loads from a digital data pack. Adam's version of Basic is compatible with Applesoft Basic: that means that Applesoft tutorials, books, and programs will work with the Adam. (It does not mean that Apple-specific Basic programs, using specific addresses, or any Apple machine language programs, can run on the Adam—they can't.)

Adam includes four expansion slots and an 80-column expansion option, as well as a CP/M option. Using the same expansion box as its dedicated gamester cousin, the Adam can play all Atari VCS games.

Adam's graphics capabilities match the specifications of the Colecovision as well. This means 256 x 192 pixel resolution, the ability to generate 32 simultaneous sprites, and 16K RAM dedicated to screen display.

Current owners of Colecovision units can upgrade them with a special memory module. The total cost for the upgrade into a full-fledged Adam system will be under $450.

First impressions? Well, it's hard to say very much about the Adam before one arrives at the lab for testing and vivisection. It is not yet known, for example, whether the machine offers monitor as well as RF output. But it does look to be a strong contender in the low-end market.

Coleco may discover that its "integrated" marketing approach needs an overhaul. Some people will not want a printer right away, or will wonder about the possibility of connecting a different printer to the Adam. If we subtract the probable cost of the daisywheel printer from the total package, we are left with an extremely inexpensive computer, which is a good thing. It should probably be available for à la carte purchase. We are also left with an extremely inexpensive daisywheel printer, which from my experience may not be such a good thing.

This raises the question of whether other printers can be connected directly to the Adam computer. Probably an interface device will be necessary; it could appear as a Coleco or third-party product. The appearance of such a product might make the à la carte Adam a perfect choice for the consumer shopping for a second computer. This is a growing category of buyer.

By far the biggest gamble the Adam represents is the commitment to the "digital data pack." Somewhere along the line Coleco decided that the home computer does not require a disk drive, and set out to find a mass storage device superior to conventional cassette storage, but less expensive than disks. They began with the continuous loop stringy floppy, then wisely abandoned it for the "data pack" drive. This is not a true random access device, as is a disk drive, and works more slowly. And as the special cassettes come from a single source, they will be harder to find and more costly than disks.

It is conceivable that an outboard disk drive for the Adam will at some time be introduced, but Coleco obviously feels that the mainstream consumer will be adequately served by "data pack" technology. This remains to be seen.

—John Anderson

CES, continued...

GamePort expansion module which is said to allow third party games to run on the TI computer despite the special TI GROM chip. Suggested price is $39.95.

In the product area, TI announced no new computers. They showed the 99/4A with a minor facelift (it is now white instead of black). They also officially announced the availability of the Milton Bradley voice recognition system for the 99/4A at $129.95 (that's $30 more than the cost of the computer!) and a line of six games and four educational packages for the voice module at $49.95 and $59.95 each.

For the CC-40, TI announced a 16K expansion module ($149.95), a video interface which produces a 40-character x 24-line display with both scrolling and paging ($99.95), and a portable, battery-powered, 300 baud, direct connect modem ($99.95).

TI also introduced two new 32K ROM software cartridges for the CC-40, Chemical Engineering and Mathematics II ($59.95 each). These join the eight previously announced packages for the machine.

Percom Data announced a wide array of new products for TI and Atari computers. For the 99/4A, Percom was showing a disk drive with 94K capacity that requires no expansion box or extra controller card. Percom also showed a dual drive model. Price for one drive is a modest $499.

An interesting disk system for Atari computers combines a single or double drive with a parallel printer port. This saves the cost of the separate interface module. Both drives are double density and store 176K. The single drive system retails for $529, the dual drive system for $829.

For owners of AT88 drives, Percom announced a kit to upgrade the drives to double density. It is easy to install and costs $169.

Printers and Plotters

You would not think that CES is the place to find new printers and plotters; however, three years ago we were saying the same thing about new computers at CES. Actually, it is logical to expect to see printers at CES since many of the typewriter manufacturers, particularly those with electronic units, regard this as a prime show.

Silver-Reed was showing their EX43, a compact electronic typewriter which, by means of their IF44 interface, can be connected to a standard Centronics parallel interface. The EX43 is a slow speed (9 to 12 cps) daisy wheel machine which can print at 10 or 12 pitch, uses carbon film or nylon ribbons, and has the expected electronic typewriter features. Price for the typewriter is $645 and for the interface, $260.

Silver-Reed EX43 can be interfaced to a computer or used as an electronic typewriter.

Olympia was showing their existing Electronic Compact typewriter which is now available with either an RS-232 or Centronics parallel interface. For those not interested in the typewriter functions, Olympia introduced a receive-only

Computers and Cereal

Before getting involved with marketing computers in 1969 for Digital Equipment Corporation, I was a consultant with Management Science Associates for five years. We worked with companies such as Proctor & Gamble, Scott Paper, General Foods, Hunt-Wesson, and General Mills. Our specialty was new product positioning and forecasting.

Today, many computer manufacturers are convinced that marketing computers is the same as marketing cereal or toilet tissue. Maybe this is coming, but it is certainly not true today. Why not?

Mass market products—toothpaste, cereal, automobiles, records—are things with which virtually everyone is familiar. Because we are familiar with them and use them regularly, we feel competent to make up our own minds on which one to buy. People decide on a particular brand in many ways—what their mothers used to buy, magazine and TV advertising, word of mouth, magazine reviews, price, packaging, or just impulse.

This is not true with computers. Most people are not familiar with them. Few, if any people can be sold on a particular computer by a TV ad alone. Mr. Average American is willing to plunk down ten grand for a Buick, but is not sure whether he should spend $500 for a home computer. Even if he is willing to spend the money, he isn't willing to decide on his own which one to get.

So how are all these computers being sold? Two ways. First, to a relatively small group of knowledgeable people—readers of *Creative Computing, Byte,* and the well-established personal computing magazines with a good renewal base and long-term readership. Second, to a much larger group of people who are influenced by the first group.

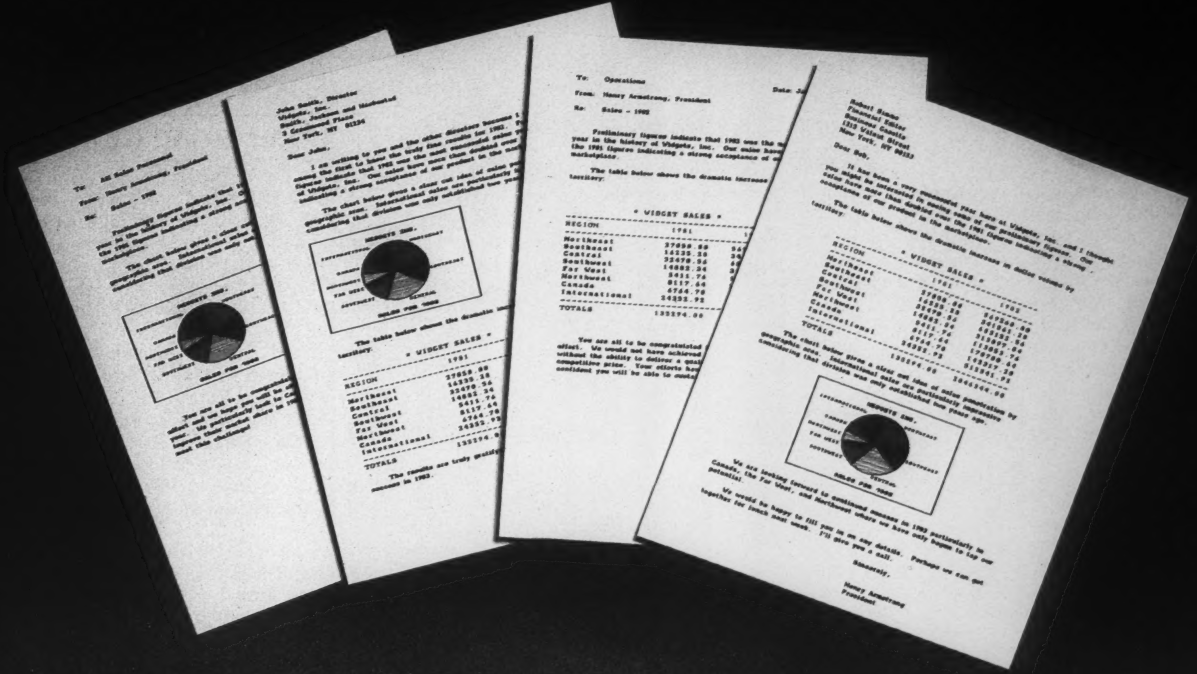
Think about it. How many people have asked you what computer to buy in the past year? Quite a few I'm willing to bet.

Sure, some people are willing to buy a computer based on a TV ad or on a review in one of the novice-focus magazines, but this is a small fraction of the total market. Don't get me wrong; I'm not saying that TV advertising is a waste of money. It is, however, a waste for a computer manufacturer to spend money on TV if they are not also placing advertising and making an effort to get their product reviewed in magazines such as *Creative.*

I hate to name names in print; it has a way of backfiring. However, let me go out on a short limb. These are some manufacturers that, in my opinion, have done things right. They first established a strong advertising program in established personal computer magazines and made machines available for review. They include Apple, IBM, TI, Radio Shack, Osborne, and, to a lesser extent, Commodore and Atari. The newest member of this group is SpectraVideo; I predict they will succeed.

On the other hand, a handful of new manufacturers think that TV advertising and mass distribution alone is the answer. Even though some of them are big companies, I predict they will find the personal computer market rough sledding because they have not recognized the incredible importance of you folks, called by The Wall Street Journal, "influencers." In this group we find, among others, Mattel, Coleco, Panasonic, NEC, Sanyo, and Casio. I hope they come around before it is too late. *—DHA*

RANDOM ACCESS IN A PRINTING BUFFER?



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- Compression of data for efficient utilization of memory space.
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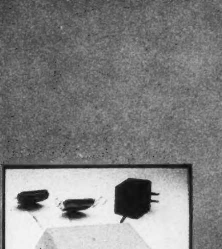
- Automatic duplication capability.
- Easily expandable, by you, from 8K Bytes to 128K Bytes.



The IS PipeLine is Universal—it works with any parallel (Centronics*—style) computer/printer combination. A special version is available for PKASO™ Printer Interfaces.

The IS PipeLine is a self-contained unit with operating manual, cables and power supply included.

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*Centronics is a trademark of Centronics Data Computer Corp.

The IS Pipeline™ Random Access Printing Buffer is patent pending.

Olympia text editor with Orbit electronic typewriter.

version of the Electronic Compact with a print speed of up to 14 cps.

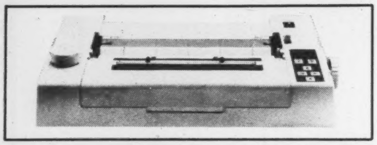
If you need more speed, Olympia has a higher speed (40 to 50 cps) unit, the ESW3000. This is a wide carriage daisy wheel unit capable of printing at 10, 12, or 15 characters per inch or with proportional spacing. In addition, it can produce boldface, expanded and double print.

For years, I have been predicting that before long companies were going to start selling computers but not call them computers at all. They'll call them education machines, or tax preparation machines, or text editors. Well, here is one of the first, the ETX I text editor from Olympia. It has a Z80A mpu and 16K memory (expandable to 48K) but in no way does it resemble a computer. In fact, it just looks like a low stand to hold the 12" amber display screen. Input and output are through the Olympia Orbit electronic typewriter. The system has all the expected features of a good word processing system—margin justification; block move, copy, and delete; forms fill in; global search and replace; centering; sub- and superscripts; page breaks; and printer stop codes.

Other typewriter/printers being shown included the Brother HR-15, a feature-packed machine at just $599; the Comrex ComRiter CR-II at $795; Smith-Corona TP-1 at $895; the Daisi*typer at $599; and the Bytewriter at $795.

Not all the activity was in daisy wheel printers; **Leading Edge** showed their new Gorilla Banana printer introduced a few weeks earlier at NCC. For $249, it is an exceptional value. (See complete description in "Print About Printers" elsewhere in this issue.)

Leading Edge also showed the C. Itoh 8600 printer, a multi-mode dot matrix printer. Draft mode prints 7 x 9 dot characters at 180 cps, high resolution mode prints 13 x 9 dot characters at 90 cps, while "near letter-quality" mode prints 13 x 18 dot characters at 60 cps. This last mode produces almost the same quality as a good daisy wheel printer, but much faster and in a unit with far more versatility. Price for the 8600 is $1295 with a parallel interface or $1395 with a serial interface.

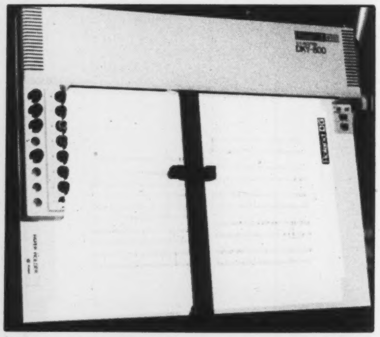


Four-color printer/plotter from Leading Edge will sell for $695.

Also new from Leading Edge is a four-color plotter, the CX 4800. A plot can be as big as 7.6" x 8" and plotter steps can be as small as 0.1 mm. The CX 4800 can also function as a printer although the print speed of 8 cps is rather slow. Price is an attractive $695.

Alphacom 81 thermal printer is priced at $169.95.

Alphacom introduced two dot-matrix thermal printers, the 80-column Model 81 and the 40-column Model 42. The 81 prints at 80 cps and can print both text and bit-mapped graphics. "Intelligent-interface" cables are available for a wide variety of home computers including the Color Computer, Vic 20, Commodore 64, Atari computers and Mattel Aquarius. Price of the 81 is $169 and cables cost $45 each. The 42 is a 40-column version of the 81 with an announced price of $179 (Huh? Could that be a typo?).



Roland DXY-800 is an eight-color flat bed plotter.

A beautiful pair of flatbed plotters was introduced by **Roland**, a Japanese company. The first is one color while the other uses eight pens. Both hold paper up to 11" x 17" and have a wide variety of built-in commands—vector, character, and graphics. Pen step size is 0.1 mm. Both come with both RS-232 and Centronics parallel interfaces and are claimed to be compatible with many current graphics packages.

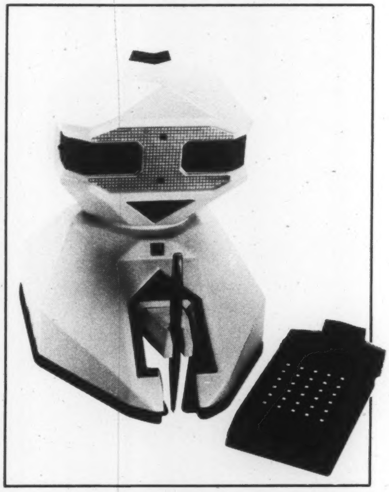
Comrex International introduced a plotter especially for the Epson QX-10 computer. The ComScriber I is a very compact flatbed plotter (14.3" x 8.8" x 2.9") that plots on 8-1/2" wide plain roll paper or mylar. Included in the $799 retail price are the plotter, cable, and QX-10 graphics software.

Other Good Stuff

After CES last summer, we ordered some computer furniture from **American Innovations** and were very impressed with the workmanship and ease of assembly. Grooves are cut where pieces fit together, and color-coded plastic clips hold the parts while the glue (furnished) dries. In all, each piece took less than five minutes to assemble. Moreover, the price is right ($69 for a 24" x 36" computer table and $49 for a printer stand).

This year, American Innovations introduced a computer workstation with elevated monitor shelf. Price unfinished is $59 while for a walnut vinyl finish the price is $89.

Androbot introduced two new products to go with B.O.B. and Topo (see Creative Computing, April 1983, p. 21). F.R.E.D. (Friendly Robot Educational Device) is a junior-sized member (12" high) of the company's family of robots. F.R.E.D. connects to a computer and can be programmed to walk around, rec-



F.R.E.D. from Androbot is a mobile extension of a home computer.

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When you're looking for solid, up-to-the-minute information, the best place to search is BRS/AFTER DARK. The one system designed for serious searchers, AFTER DARK offers you more databases citing more authorities on more subjects than any other popular online information service—at the lowest cost.

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The range of databases available keeps expanding all the time. AFTER DARK now brings you the full text of the **Academic American Encyclopedia**, as well as the **Harvard Business Review**.

And for microcomputer buffs, there's a new online Software Directory listing major software packages.

AFTER DARK's simple, interactive language and straightforward logic take only minutes to master. The system is outstandingly comprehensive, remarkably fast, and above all, fun to use. All you need is your classified BRS password and any dial-up system. Then, every weekday from six in the evening until the early morning hours—round the clock on weekends and holidays—you can summon up a wealth of valuable information.

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ognize hazards, and draw plots with a pen that he holds in front of his body. Could F.R.E.D. possibly be the incarnation of the original Logo turtle? Price $295.

Androbot also introduced AndroMan, termed the world's first 3-D videogame robot. The 12" high robot responds to infrared signals transmitted by a joystick. It is designed to be used with an Atari VCS and comes with a game cartridge, transmitter, 6' x 8' cardboard game playing field, set of game pieces imprinted with coded data, and an instruction manual. No price yet.

Software Multiple Formats

Datamost created quite a splash on the convention floor by hiring San Diego's caped crusader, 300-pound Captain Sticky and his band of scantily clad "Stickettes." Dealers and members of the press were invited to play the new Datamost game, *Cosmic Tunnels,* the first in a series of Captain Sticky games, against Annie Ample for various prizes. This Atari game has 16 separate screens of compelling action as you try to break through a space blockade.

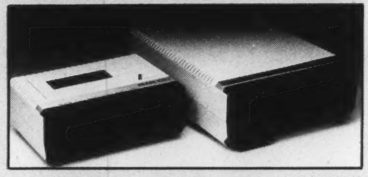
Also introduced for the Atari computer were *Wiz 'N' Roo,* a two-player, 3-D game in an enchanted forest; *Monster Smash; Topsee Turvee,* a grid game for younger players; *Jet Boot Black; Venus Voyagers* in which you pilot a spacecraft down a tunnel; *Mail Boy; Roundabout; Air Strike II; Night Raiders;* and a nifty graphics package, *Paint Wizard.* Most are available on both disk and cartridge and cost $35 to $40.

Datamost also added 11 new Apple games to their lineup including *Snowbound,* a maze game which puts you, a billy goat, in the Arctic; *Argos; The Biletoads; Conquering Worlds,* a strategic adventure with arcade-type action; *The New Human Fly; Ardy the Aardvark* in which you have to eat ants; *Space Ark; Cavern Creatures; Roundabout* with 24 different enemies; and *Monster Smash.* Prices from $29 to $39.

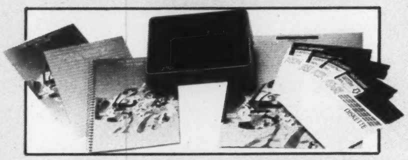
Also introduced were eight games for the Panasonic JR-200 computer, a machine with which we are much impressed. The games show off the JR-200 to advantage, and some are even better than the Apple originals upon which they are based. The games include *Mars Cars, Vortex, Swashbuckler, Crazy Mazey, Solitaire, Roundabout,* and *Hyper Text.*

Broderbund introduced five high-quality games for the Apple: *Gumball,* in which you work in a gumball factory

Atari Computers Back on Track



Atari 1010 Program Recorder and 1050 disk drive.



A numerical Keypad and Bookkeeper make the Atari into a serious accounting tool.

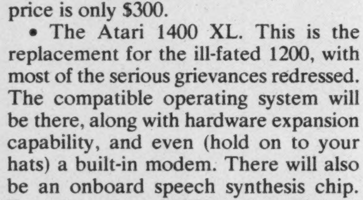
Atari unveiled a whole group of new hardware products at the CES, including four new computers. The announcements came riding on the coattails of the merger of the home video and microcomputer divisions of Atari, which should give the company a much better focus for the future.

The products, which should all be available before Christmas, are as follows:

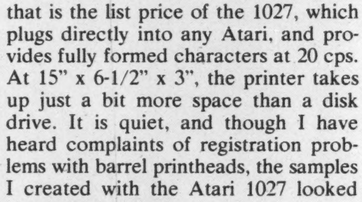
- The Atari 600 XL. With 16K expandable to 64K, a full-stroke keyboard, and built-in Atari Basic, the machine has a promising future. Especially so in light of the fact that it will employ the original operating system that made its predecessors famous—that means it will boot all existing Atari software within existing memory constraints. It lists for $200.
- The Atari 800 XL: This machine will have 64K standard, and also use the old OS, as do all the new computers from Atari. And, using its expansion port, memory can be expanded to a whopping 192K. Not too many details have yet been made available concerning the expansion capability. The list price is only $300.
- The Atari 1400 XL. This is the replacement for the ill-fated 1200, with most of the serious grievances redressed. The compatible operating system will be there, along with hardware expansion capability, and even (hold on to your hats) a built-in modem. There will also be an onboard speech synthesis chip. For a list price of $500, we would have settled for a measly parallel port.
- The Atari 1450 XLD. Not much more than a 1400 XL for your $800 list, except for the built-in low-profile 5 1/4" disk drive. Because the drive is built-in, it can use a parallel configuration, allowing it to work much faster than the outboard serial drives. Room is provided in the 1450 for the installation of a second parallel drive.
- The Atari 1050 Disk Drive. This is the new stand-alone half-height drive. Using the new DOS 3.0, it is capable of over 125K of storage on a single disk. At the same time, it remains completely compatible with all existing 2.0 disk software. The door mechanism on the drive has been improved, now featuring a latch-type closure. The list price for the unit is $450.
- The Atari 1027 Printer. An 80-column letter-quality printer for $350? There must be some mistake. But no, that is the list price of the 1027, which plugs directly into any Atari, and provides fully formed characters at 20 cps. At 15" x 6-1/2" x 3", the printer takes up just a bit more space than a disk drive. It is quiet, and though I have heard complaints of registration problems with barrel printheads, the samples I created with the Atari 1027 looked absolutely perfect.
- The Atari CP/M Module. The Atari is a games machine, right? Well it is true that the Atari plays better games than any other micro or video game. But it has always done more. And now, with CP/M, it becomes a 64K Z80 machine, capable of running at 4 MHz. What does that mean to you? It means access to heavyweight word processing, database, spreadsheet, and business software.

With a display switchable to 80 columns, the CP/M module makes any Atari into just about the most serious machine you could imagine. Not priced at press time.

Atari 600 XL.

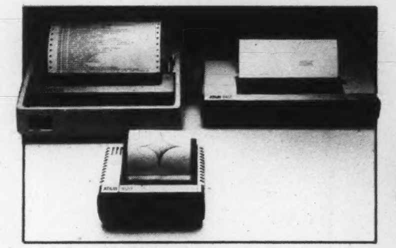


Atari 800 XL.

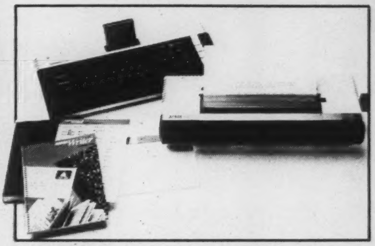


ATARI
TRAK-BALL
ATARI
TOUCH TABLET

New peripherals: a trackball and touch tablet.



New printers from Atari: the 40 cps 1025, letter quality 1027, and four-color 1020.



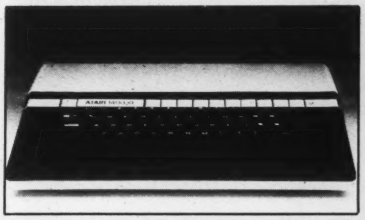
Atariwriter, an Atari 600, 1027, and program recorder form a complete word processing system for under $750.

- The Atari Expansion Box. When the Apple II was introduced, it had eight slots in the top of its board for add-on hardware. This was a part of what made that machine so popular. Now an expansion chassis will make eight slots available to the Atari machine—in addition to two RS-232 serial ports and a bidirectional parallel bus. Now special peripherals and custom hardware cards can play a part in the future of the Atari. Not priced at press time.
- The Atari Light Pen. After a delay of two years, Atari will finally market a light pen under its own label. Designed by light pen wizard Steve Gibson, the light pen is activated by tip switch and will include driver software for under $100.
- The Atari Touch Tablet. This product bridges the gap between the joystick and graphics tablet, allowing the user to draw on a 4 1/2" x 6" surface as if it were the CRT screen. There are two pushbutton switches on the tablet as well. Driver software will allow sophisticated drawing and design applications. Not priced at press time.
- The Atari Lab Kit. Separate modules will be released to allow use of the Atari computer as a scientific measurement device. The first will be a temperature module which turns the Atari into a precision electronic thermometer. Other announced modules include Light, Timekeeper, Lie Detector, Reaction time, and Heartbeat. They will retail for $90 each.
- The Atari Remote Control Joystick. Operated by battery, this joystick transmits pulses to a base unit, allowing the user to create a wireless gaming environment. They work up to 20 feet from the unit. Under $80 for the pair.
- The Atari Trak-Ball. A roller controller suitable for handheld or tabletop operation. Especially suited to games like Centipede and Missile Command which use trackball control in the arcades. Switchable between joystick emulation and true (analog) operation. Not priced at press time.
- The Atari Numerical Keypad. Brings the convenience of a calculator-style keypad to Atari computers. Includes keys labeled YES and NO, ESCAPE and DELETE. $125.

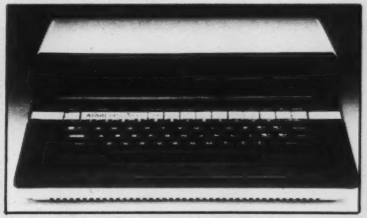
If Atari can bring these products to market and keep the pricing competitive, it should return to a formidable position in the industry by 1984.

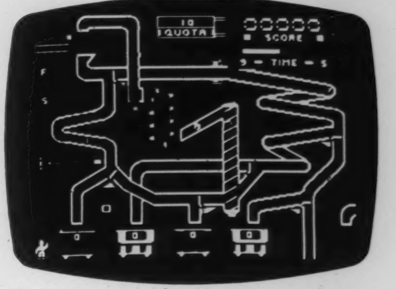
Atari Logo on a 16K ROM cartridge was also on display, but we did not get a chance to explore it. It will include special Atari-specific graphics and sound commands. *—John Anderson*

Atari 1400 XL.



Atari 1450 XLD.





Gumball *is a challenging new Apple game from Broderbund.*

and must locate dynamite crystals in the sugar supply; *Drol,* an oddball, challenging rescue mission; *Spare Change,* a hilarious, slapstick arcade game; *Lode Runner* with an astounding 150 screens; and *Questron,* a graphic adventure. Prices $30 to $45.

Three releases for Atari computers included *Matchboxes,* an animated hidden word puzzle game; *Cargo Bay,* the latest from David "Midnight Magic" Snider; and *Operation Whirlwind,* a battle action game.

Broderbund entered the Commodore 64 market with four winning games: *Choplifter, Seafox, Serpentine,* and *David's Midnight Magic.* All are on cartridge and are priced from $35 to $45. Seafox and Sky Blazer were also introduced for the Vic-20.

Broderbund also introduced two games for the Atari VCS and two for the 5200.

Fox Video Games made a splashy introduction of *Porky's,* a five-screen game in which you must stop Pee Wee, Balbricker, and Wendy from blowing up Porky's Bar. Versions are available for Atari computers and the VCS, Vic-20, TI 99/4A, ColecoVision, and Intellivision.

An unexpected exhibitor at CES was the **Einstein Corporation** with their new line of "Master Programs" for the IBM PC. These include *GhostWriter,* a word processing package ($395); *GhostLetter,* four packages which contain thousands of stored model letters ($50 to $200 each); *GhostSpeller* ($150); and *GhostMailer,* a mailing list program ($80).

A fascinating program, *Memory-Trainer,* is a graphics tutorial that helps users remember faces, dates, telephone numbers, lists and quotations, by employing association as a memory tool. This is available for the Apple, Atari 800, and Commodore 64 ($90).

Another entry was the *Einstein Compiler,* a package to increase the speed of Applesoft Basic programs ($129).

Some Very Good Reasons to Buy an Echo Speech Synthesizer.

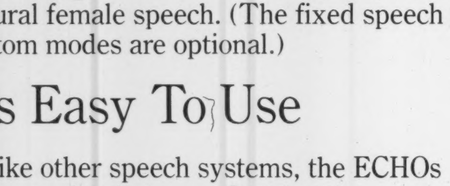
We're confident we have the most intelligible, versatile, and economical speech synthesizer on the market. Once you hear it, we're sure you'll be convinced too. All ECHOs are capable of speaking in four different voice modes which range from a robotic machine voice to natural female speech. (The fixed speech and custom modes are optional.)

It's Easy To Use

Unlike other speech systems, the ECHOs are very simple to use. It only takes a minute or two to get the ECHO talking. Any text which can be printed to the screen can be spoken. If you've written a BASIC program you can add speech with simple modifications.

Software Compatibility

Not only can you add speech to the programs you write yourself, over 25 top educational and adventure software manufacturers are currently designing programs to be compatible with the ECHO][. Be watching for details.



Value

Each ECHO comes ready to use with a speaker and tutorial-style manual. The ECHO][, priced at $149.95, also comes with a variety of demonstration and utility programs. The new ECHO GP (General Purpose), priced at $199.95 is a stand-alone unit with its own on-board microprocessor; it will interface with any computer through the serial port. All ECHOs have a two year warranty.

Bells And Whistles

If you want bells, whistles, music and sound effects, plus state-of-the-art sprite graphics capabilities, the ECHO technology is available on Synetix Systems' new Supersprite Board.

Check It Out

Most Apple dealers have the ECHO][available for demonstration as part of Street Electronics/ Orange Micro's unique Grappler+™, Bufferboard™, ECHO][™ Talking Demonstration.

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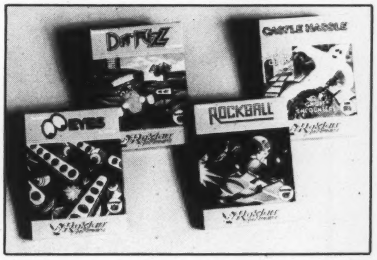
CIRCLE 248 ON READER SERVICE CARD

Mike Katz of **Epyx** announced that they had acquired the licenses for several Bally Midway games including the popular *Gun Fight* and *Seawolf II* which will be offered shortly for Atari and TI computers. Also being shown in multiple formats was *Jumpman*, one of our favorite games; *Jumpman Junior*, a version for younger players; *Pit Stop; Temple of Apshai; Dragon Raiders;* and *Crush, Crumble,* and *Chomp.*

Software Atari Computers

Roklan introduced five games for Atari computers including *Castle Hassle*, an adventure game with 60 rooms and 40 treasures; *Rockball*, a version of the arcade game; *Eyes*, a nightmarish chase game; *Da' Fuzz*, a wild and wacky car chase game; and *Lifespan*, a five-part game in which you guide the physical development and personality of a character from birth onward.

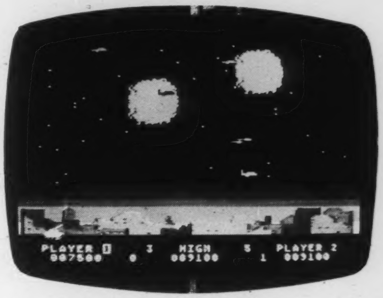


Roklan introduced five new games for Atari computers.

Roklan also introduced six games intended to offer "education through entertainment" for elementary age children. These included *Pyramid Puzzler*, a math skills game; *Star Maze* (division problems); *The Art of Division* (more division); *Space Journey* (percents); *Picture Parts* (basic math); and *Reading Flight* (reading skills). On cartridge the games cost $45.

A three-cassette software/audio package, *First Encounter*, is designed to introduce youngsters to the Atari computer ($50).

TG, maker of high-quality game controllers, introduced four cartridge-based games for Atari computers. These include *Droids*, a fantasy space game; *Nightstrike* in which you are a tank commander protecting a city; *Ozzy's Orchard*, in which you protect your orchard in four seasons; and *Abracadabra*, a two-player maze game. Price $45 each.



Nightstrike *was one of four new Atari computer games introduced by TG.*

Starpath, maker of the add-on Supercharger for the Atari VCS which permits the use of complex cassette-based games with the system, introduced four more games in this format, three games for ColecoVision, and two games converted for the Atari computer. These include *Dragonstomper*, a challenging multi-level adventure game (one of my son's favorites); and *Escape from the Mindmaster*, a fascinating 3-D maze game in which you are the subject of the diabolical experiments of the Mindmaster.

Software Commodore Computers

Sig Hartmann, president of Commodore Software, announced new, low prices on software ($10 to $20 range for most games and educational packages) and an unbelievable array of 70 new packages. We can't possibly list them all here, but it is apparent that Commodore has embarked on a campaign to be at the top of the software heap.

For the Vic-20, ten packages were introduced including *Vicwriter* (word processing), *Simplicalc* (spreadsheet), *Vicfile* (database), *Menu Planner, Quizmaster*, three "Know Yourself" packages, an educational game, and *Starpost* (action game).

Most of the new packages are for the Commodore 64 and include entries for word processing, financial calculations, business, programming, education (Logo, Pilot, and 27 packages in various subject areas), six Infocom adventure games (the *Zork* trilogy, *Starcross, Suspended,* and *Deadline*), 19 arcade games including some of the best from Bally/Midway, and two music packages. They also announced the availability of *Multiplan*, the comprehensive spreadsheet package from Microsoft, for under $100.

Three spreadsheet packages for the Commodore 64 and Vic-20 were announced by **Computer Software Associates.** *PractiCalc 64* includes a database manager (actually search and sort routines), and graphics for producing bar charts along with the basic spreadsheet software. Price is just $55. A similar package, *PractiCalc Plus* is available for the Vic-20 for $50.

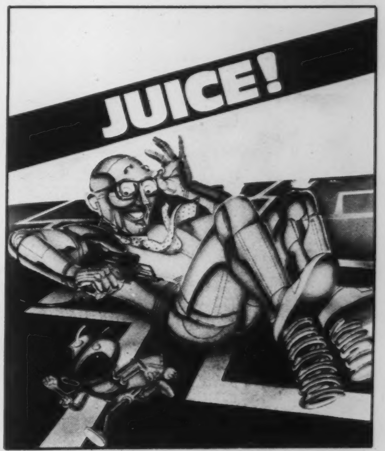
PRACTICALC 64
COMPUTER SOFTWARE

PractiCalc 64 *is a versatile spreadsheet program for the Commodore 64 from Computer Software Associates.*

A more advanced package, *PS*, for both the Vic-20 and 64 has 22 mathematical functions, a flip command to interchange rows and columns, a linear equation solver, a function solver, and a method to produce scaled bar graphs and histograms. Price is "under $100."

Tronix introduced three new Vic-20 games on cartridge: *Gold Fever*, a maze game in which you must gather gold in a dangerous mine shaft; *Scorpion*, a 32-level survival game; and *Deadly Skies*, a 32-level helicopter navigation and shooting game. Games are on cartridges for $40 each.

For the Commodore 64, Tronix was showing the ever-popular *Kid Grid* and *Juice*, an addictive game in which you



Juice *strategy game from Tronix is available for Atari and Commodore computers.*

guide Edison around six printed circuit boards. *Juice* is also available for Atari computers ($30).

Data-Assette, a maker of Timex/Sinclair peripherals and software, jumped into the Vic-20 and Commodore 64 market with both feet. Fourteen new games for the Vic-20 include *Quackers* (shooting gallery), *Annihilator* (like Defender), *Orbis, Night Crawler* (fast action game), *Krell, Colonel's House* (mystery adventure), *Hopper, Skramble, Alien Soccer, Myriad, Tank War* (for two players), *Space Storm* (like the arcade game), and *Space Phreeks.*

The three games for the 64 include *Adventure Pack 1* (three text adventures), *Monopole* (like Monopoly, but set in London), and *Grave Robbers* (a graphic adventure). All games cost $20.

Data-Assette also introduced a line of new games and business software for the Timex 1000 as well as several peripherals for printer, modem, and tape interfacing. *Sync* magazine will have full details.

Another Timex/Sinclair software manufacturer, **Softsync**, introduced a line of software for the Commodore 64. *Personal Accountant* consists of three integrated programs for a double entry bookkeeping system that can keep track of accounts for home or a small business. *Computer Mechanic* provides a maintenance file for one or a fleet of vehicles.

Softsync also released *Mothership*, a 3-D, multiple-screen seek and destroy action game for the 64, and announced six more games for release in the next two months. These include *Cosmic Gorilla, TunnelVision, Bug Blaster, Red Alert,* and *Circuit Runner.*

Many of these programs are also available for the Timex 2000; read more about them in *Sync* magazine.

Comm*Data was showing four action games for the Commodore 64, *Firing Line, Pegasus Odyssey* (combat the killer bats in a marvelously detailed landscape), *Ape Craze,* and *Supercuda* (a multiple screen Pac-creature type of game). More about Comm*Data in the section on Educational Software.

United Microware Industries was showing *Magpie 64*, a menu-driven file management program for the Commodore 64. *Wordcraft 64,* a word processing package and *Worldtalk 64*, a communications package, were also on display.

UMI showed several new games including *Super Amok*, a blast-the-robots game for the Vic-20 and *Renaissance*, a game similar to Othello and Reversi for the Vic-20 and 64 ($30 to $40).

Software
Texas Instruments

As mentioned in the computer section, third party software manufacturers were not at all pleased with the decision of TI to install protective circuitry in their computers to prevent any but TI licensed software from running on the machines. Hence, relatively little software was introduced for TI computers.

Of course, **Texas Instruments** themselves had some interesting new entries. Four games include *M*A*S*H* (licensed by TI from Fox, a new twist), *Sneggit* (your chicken guards eggs from hungry snakes), *Moonmine* (recover treasures stolen from earth), and *Entrapment* (from your spaceship you protect the earth against invading insects). This last game is made by American Software Design.

Carl's Computer Cab
PLAY STAR TYRANT OR 1040 PREPARATION OR 100 OTHERS!
25¢

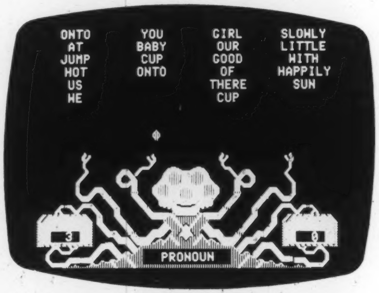
"Once more around the block please, Carl!"

TI was also showing *TI-Mini-Writer*, a word processing program for the 99/4A developed by Model Masters. It is a basic package, cassette-based, but has a full selection of functions and sells for an attractive $19.95.

99'er Ware was showing a line of ten games for the 99/4A. These are all cassette packages (no protection problem here) and each one comes with a short tutorial booklet on a selected programming technique. The packages are written in Basic and don't have super-speed arcade action, but at $9.95 are good values.

Educational Software

To augment TI Logo on the 99/4A, TI released a selection of the best Logo procedures developed at the Lamplighter School, one of the earliest regular users of the language. The package includes five different activities and costs $40 for the cartridge.



Word Invasion *from Texas Instruments is a word skills game.*

Two packages licensed from Development Learning Materials include *Word Radar*, a word recognition game, and *Word Invasion*, a game which requires matching a word with a part of speech. Cartridges are $40 each.

Eduware Services introduced a Basic learning tool, *Hands On Basic Programming.* This package includes a 200-page manual and an interactive instruction disk with several innovations such as Trace (displays each program line as it is executed), Finetrace (follows the computation process), Pace (controls the speed of execution), and Find (locates every place that a variable is used). Price is $79.

The popular *Prisoner* game had been converted and extended for use with Atari computers and is called *Prisoner* 2. Based on the PBS TV series, the player

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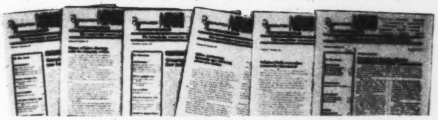

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CIRCLE 123 ON READER SERVICE CARD

must match wits with the masters of The Island ($40).

Eduware also announced the availability of *Algebra 1* for the IBM PC. Eventually all six volumes will be available.

Spinnaker was showing their entire line of software and announced that it was now available for the Commodore 64 and Atari computers. Titles include *Alphabet Zoo, Cosmic Life, Delta Drawing, Delta Music, Facemaker* (love that one!) *Fraction Fever, Kids on Keys, Kindercomp, Story Machine* (a favorite of my Number 2 daughter), and *Up For Grabs.*

The folks at **DesignWare**, authors of several of the wonderful Spinnaker packages, broke off on their own and introduced three packages: *Spellicopter, Crypto Cube*, and *Creature Creator.* Betsy Staples liked *Crypto Cube* so much that she insisted on reviewing it for her upcoming roundup of word games and was reluctant to let it fall into the hands of our educational reviewers. It may be premature, but it appears that this is a company with a great future!

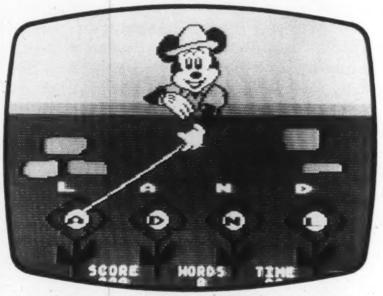
Xerox was attracting a great deal of attention with their three *Stickybear* packages, *Bop, ABC, and Numbers.* We were impressed with the sophisticated animation of these packages and the outstanding packaging which includes a poster, stickers, book, and, of course, the software disk. For the Apple, $40.

Xerox also showed *Old Ironsides,* a two-player game of naval strategy and skill with three-masted ships. $40; Apple only.

For the Commodore 64 and Vic-20, **Comm*Data** was showing a delightful line of programs including *English Invaders* (no, they haven't been seen by Margaret Thatcher; this is a drill on parts of speech); *Toddler Tutor* (early skills); *Gotcha Math Games* (arithmetic drill) and two math tutorials.

A *Sketch & Paint* package lets you create and save high-resolution pictures and sound effects on tape or disk.

Walt Disney Telecommunications announced the availability of *Mickey in the Great Outdoors,* a two-part game for Atari computers. The hiking game develops and reinforces grammar and



Mickey and the Great Outdoors *is an educational game from Walt Disney Telecommunications.*

The Party Line

John Anderson

A reporter's work is never done. After a hard day walking the length and breadth of the Consumer Electronics Show, the real job begins: covering the various parties spread across the host city. This is a necessary part, of course, of CES coverage by the stalwart and dedicated staff of *Creative Computing.*

creative computing

PARTY PROFILE

Name: Clipper Ship Commodore Party

Type: Press and wholsalers reception, also corporate bigwigs.

System: Get them on board, then swab them down.

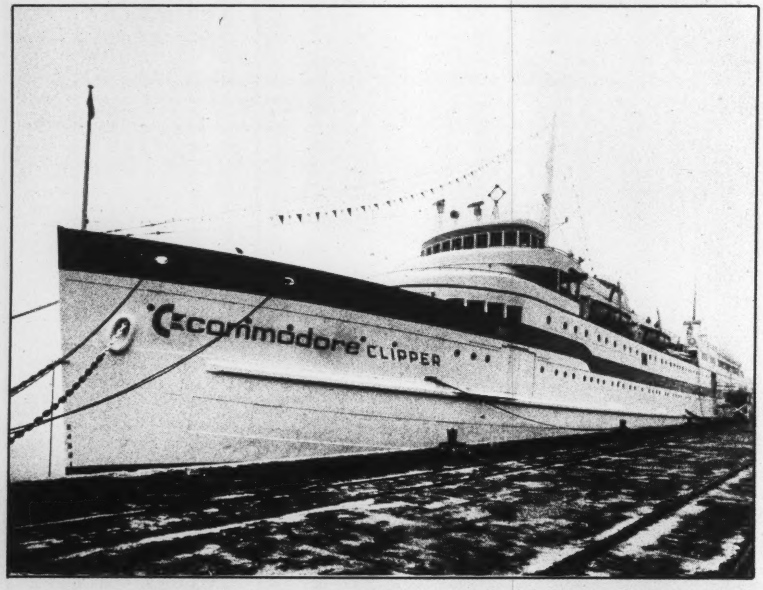
Format: Aboard ship on Lake Michigan.

Language: Mostly sweeping generality and hyperbole.

Summary: Excellent atmosphere, not enough munchies.

Price: Free, by invitation only.

Manufacturer:
Commodore Business Machines
487 Devon Park Dr.
Wayne, PA 19087



Day One

We started at the "clipper" ship Commodore, docked on Lake Michigan. It was an old ferryboat, decked out in 1930's finery. Various and sundry goodies were thus unveiled in a decidedly nautical manner, although since the ship had no engines, we were unable to leave the dock.

The bar was handsome, and drinks plentiful. Unfortunately there wasn't much to munch aside from cheese and grapes, so the drinks took hold early. I knew we should have had a snack before coming.

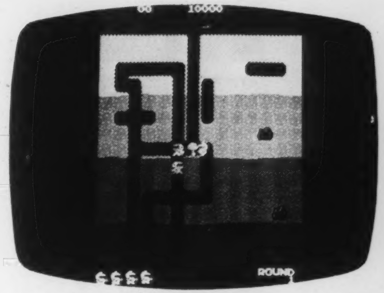
The presentation was backed up by a very nice "hands-on" session and party. For atmosphere, the Commodore affair had assumed a lead that would not be surpassed. After a few drinks, I was nearly surpassed by the wheels of a crosstown bus.

Next we arrived at a party at the Adler Planetarium for Creative Software. Those folks make programs for the Vic machine, and hit upon the exciting idea spelling skills while the exploring game requires the player to complete number sequences and incomplete equations.

Game Systems

For complete new product information on the Atari, Coleco, Mattel, Vectrex, and other game systems, you'll have to check our all-games magazine, *Video & Computer Games* (formerly *Video & Arcade Games*).

However, we were very impressed with the quality and quantity of releases from good ole **Atari**. After being scooped by the great games of Activision, Imagic, CBS, and others, and after the bombs of E.T. and Pac-Man, Atari has roared back with no fewer than 28 new games for the VCS and 5200. Moreover, most of them are really good games like *Pole Position, Jungle Hunt, Kangaroo, Ms. Pac-Man, Dig Dug, Joust, Moon Patrol, Battlezone,* and *Vanguard.*



Atari introduced 28 new games for the 2600 and 5200 including the popular Dig Dug.

Also, the Sesame Street and Disney licensed educational games are finally going to be released. Atari now has a voice activated game control unit, like the TI/Milton Bradley unit, and four games which respond to voice input. With all this ammunition, contrary to the opinion of Wall Street, it looks like this should be a good year for Atari.

General Consumer Electronics, makers of the Vectrex game system announced a price reduction of the system to around $100. But more interesting,

With very little fanfare, GCE was showing a computer add-on for the Vectrex game system.

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PARTY PROFILE

Name: Creative Software Cosmic Party

Type: Rock and roll bash in unique setting.

System: Open bar, matronly ladies roving with food.

Format: In among lunar terrain & lander.

Language: Very loud, to be heard over band.

Summary: Good food, good band, bad drinks.

Price: Free, by invitation, crash if you can.

Manufacturer:

Creative Software
201 San Antonio Circle
Mountain View, CA 94040

of holding a party at the planetarium on the lake.

There among LEMs, scale model lunar terrain, and a lunar rover, we were entertained by a surprisingly good live band, and managed to ingest some very tasty hors d'oeuvres. Owen was somewhat shaken when he discovered that the cola used in his rum and coke was in fact a Midwestern soda called Like. When I ordered a scotch and soda and got a scotch and tonic, we decided to leave.

On a whim, we then headed to the McCormick Inn, adjacent to the convention center itself. To our disappointment, we didn't find any active parties there, and ended up at the bar. The evening turned out rather nicely nevertheless, as we played table version Pac-Man and phoned home, as E.T. might say.

I wanted to find the Billygoat Cafe on Lower Wacker Drive, but the evening was growing late, so we called it quits, vowing to locate it the following night.

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PARTY PROFILE

Name: McCormick Inn Bar

Type: Hotel bar.

System: Wait for service, wait some more.

Format: Nice overstuffed chairs, table Pac-Man games.

Language: Quiet, technical, mostly slurred.

Summary: Nice if you were staying there.

Price: By the drink, BYO CES badge.

Manufacturer:

McCormick Inn
Lake Shore Dr.
Chicago, IL

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PARTY PROFILE

Name: Atari Alda Reception

Type: Standard hotel ballroom treatment.

System: Dash for the shrimp before it's gone.

Format: Drink, eat, wait for Alan, drink, eat.

Language: Hushed tones of excitement.

Summary: One of the best moments of CES.

Price: Free, by invitation only.

Manufacturer:

Atari Inc.
P.O. Box 427
Sunnyvale, CA 94086

Day Two

This was the big night for CES parties. First was the Westin (née Ambassador) Hotel reception for Atari, where Alan Alda was unveiled as the new corporate spokesperson. What a wonderful guy. Why even if he hadn't opened his mouth everybody would have loved him. He just sort of emanates integrity and compassion.

And the food wasn't bad either. The jumbo shrimp sure went fast though. By this time I was utterly starved and made my way directly to the buffet table upon arrival. Good reception rule: stock up first, then stake out a place to sit. The scotch and sodas were the best yet—a dangerous development.

It was at the Atari gala that we connected with Arlan Levitan of the Michigan Atari Computer Enthusiasts user's group and Vincent Wu, an Atari software manager. Thus was formed a search party in search of further partying.

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Sticky Bear Bop	39.95	**33.95**
Sticky Bear Numbers	39.95	**33.95**
Sticky Bear ABC	39.95	**33.95**

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	List Price	Our Price
Blade of Blackpoole	39.95	**33.95**
The Joyport	49.95	**42.45**
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~~125.00~~ **93.75**

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CIRCLE 126 ON READER SERVICE CARD

GCE introduced a light pen and three animation programs for the Vectrex game system.

they were showing a marvelous light pen combined with four cartridges that take advantage of it. We especially liked *Art Master* and *AniAction*, both of which allow you to create your own animated images ($40).

GCE also showed an amazing *3-D Imager*, a goggles-like contraption that, in conjunction with four software packages, actually produced a real 3-D image. Price is $50.

As always, there were far too many new products at CES for us to describe here in detail. However, many of the computers, peripherals, and software packages mentioned above will receive a thorough, in-depth evaluation and you will read the results on these pages. It should be an interesting fall!

For more information about any of these products, please write directly to the manufacturer. Addresses are listed below. Please mention *Creative Computing*. ☐

Manufacturers of Computers and Peripherals

Alphacom, Inc.
2323 S. Bascom Ave.
Campbell, CA 95008

American Innovations, Inc.
10428 Product Dr.
Rockford, IL 61111

Androbot, Inc.
1287 Lawrence Station Rd.
Sunnyvale, CA 94086

Atari, Inc.
1265 Borregas Ave.
Sunnyvale, CA 94086

Canon USA
One Canon Plaza
Lake Success, NY 11042

the Tremont Hotel for the Electronic Arts gala. Electronic Arts is simply the hottest new software house on the home computer horizon. The decor and service at the Tremont were far and away the best hotel hospitality we were to see. You haven't lived until you have sampled Cricket coffee, which is a glass warmed by burning cognac, then quenched with fresh coffee, a touch of Amaretto, nutmeg, and a big dollop of fresh whipped cream. Wow!

Electronic Arts president Trip Hawkins, whose picture graced the business section of *Time* magazine last week, got involved in a cutthroat game of *M.U.L.E.* with the game's designers. *M.U.L.E.* is a very absorbing next-generation computer game in which players cooperatively (or not so cooperatively) colonize an alien planet. I could understand his distraction.

There were two other people of note at the party. One was Steve Wozniak, who is on the board of directors of Electronic Arts, and whom it was my pleasure to meet for the first time. The other was Dave Ahl, my boss. Dave said it was high time to check out the action at Activision, so we shoved off.

Activision is a company that has grown phenomenally in the past three years or so, as have its parties. They have never spared any expense in mounting their events, and each party must increase substantially in scale to top the previous one.

Unfortunately, most CES repeat attendees have learned of this noble effort. This year, at the 12th floor Ballroom of the Ritz-Carlton, it seemed as if everyone who had been at CES that day was trying to get into the Activision party. Even more unfortunately, they *were* getting in. Nobody ever checked for my invitation. I realized that any attempt to turn away people in those kinds of numbers could easily have resulted in a riot. And so all were admitted.

As a result, the Activision party was one of those affairs where merely walking across the room is impossible. Despite the fact that there had to be a dozen separate bar stations and a dozen separate food stations, serving everything from prosciutto and melon to spaghetti, and despite the fact that some of the most interesting people in the industry were there, it was impossible to have much fun. Crowds get to me.

I did manage to talk to John Loveless of Synapse Software and Dan Gorlin, author of *Choplifter*. And the stuffed clams were pretty incredible. But the crowd *was* getting to me.

After Dave and I nearly became involved in a fracas with a rather drunken leather jacket type, I became somewhat anxious. I managed to locate Owen and Arlan, and we hightailed it.

It was time for the Billygoat Cafe. This is the bar and grill upon which the "cheeseborger" skit was based years ago on "Saturday Night Live." Belushi and Ackroyd used to frequent the place, as still do raisin-eyed Chicago Tribune pressmen.

The place is a wonderful, old-fashioned dive. Your drink sticks to the bar and must be pulled off forcibly. On

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PARTY PROFILE

Name: Electronic Arts Gala
Type: Navy blue blazerish/tweedy fun.
System: Tremont Hotel, impeccable treatment.
Format: Open bar, lovely canapes, ice sculpture, etc.
Language: Somewhere between Preppie and Valspeak.
Summary: Any party Woz is at is okay by me.
Price: Free, by invitation only.
Manufacturer:
Electronic Arts
2775 Campus Dr.
San Mateo, CA 94403

creative computing
PARTY PROFILE

Name: Activision Party
Type: Agoraphobic's hell
System: Just let 'em in, don't ask questions.
Format: Beat your way to bar, flail to food.
Language: Mostly vulgar.
Summary: Let's see how many people we can jam in here.
Price: Free to all.
Manufacturer: Activision, Inc.
3255-2 Scott Blvd.
Santa Clara, CA 95051

CES, continued...

Casio, Inc.
15 Gardner Rd.
Fairfield, NJ 07006

Coleco Industries, Inc.
200 Fifth Ave., Rm 1234
New York, NY 10010

Comrex International, Inc.
3701 Skyparek Dr., Suite 120
Torrance, CA 90505

Leading Edge Products, Inc.
225 Turnpike St.
Canton, MA 02021

NEC Home Electronics (USA), Inc.
1401 W. Estes Ave.
Elk Grove Village, IL 60007

Olympia USA
Rte. 22, P.O. Box 22
Somerville, NJ 08876

Percom Data Corporation
11220 Pagemill Rd.
Dallas, TX 75243

Quazon Corporation
3330 Keller Springs Rd.
Carrollton, TX 75006

Rabbit Computer, Inc.
Rm. 610, Chamber of Commerce Bldg.
39-01 Main St.
Flushing, NY 11354

Rolandcorp US
7200 Dominion Cir.
Los Angeles, CA 90040

Romox, Inc.
501 Vandell Way
Campbell, CA 95008

Silver-Reed America
2 Soundview Dr., Suite 100
Greenwich, CT 06830

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New York, NY 10018

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901 E. 233rd St.
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Unitronics
401 Grand Ave.
Oakland, CA 94610

Video Technology (US), Inc.
2633 Greenleaf Ave.
Elk Grove Village, IL 60007

Party Line, continued...

creative computing PARTY PROFILE

Name: Billygoat Cafe

Type: Sleazy dive.

System: Crawl in, preferably on all fours.

Format: Scream "cheeseborger!"

Language: English, with heavy Greek accent.

Summary: Fabulous.

Price: By the cheeseburger, chips, Pepsi.

Manufacturer:
Billygoat Cafe
Lower Wacker Dr.
Chicago, IL

the other side of the bar is the grill, manned by a smiling Greek.

"I'd like a cheeseburger."

"Cheeseborger!"

"With french fries."

"No fries. Only cheeps."

"Okay. Chips. And a Coke."

"No Coke. Just Pepsi."

I'm sure by this time he does it just for the tourists (which I'm sure we resembled). But it was great. We stayed until closing time.

Day Three

Dave, Owen, and I headed back to the Westin for a hands-on session with the new Ataris. We stumbled onto, then crashed, I guess, a party being held for Atari International. The food was Japanese, with chefs preparing tempura at the buffet. The food was utterly sensational. I ate enough shrimp to keep a killer whale happy. Dave was wearing his blinking LED boutonniere, but people at that banquet were too shy to ask him about it.

Then we went up to the 14th floor to play with the new Atari products. Steve Gibson was on hand, demonstrating the new Atari light pen. Steve is a very entertaining guy, and the perfect showman. He had the crowd oohing and aahing like crazy. I sure hope they let him do his own promotion—he's a natural.

Dave called Ken Uston, then left for the Datamost Party at the Playboy Club. We stuck around to snoop for a while. I congratulated A.J. Sekel of Atari for reading and following the advice I had given him in "Outpost: Atari." He just laughed. And who showed up? Vincent Wu, just in time to accompany us to the Playboy Club.

We made a mistake, but it turned out to be a fortunate one. We saw a Playboy sign on a building, headed for it, then realized that it was a business office. But in front of the building, we ran into two of our New England sales reps, Merrie Lynch and Nancy Wood. They had made exactly the same mistake. The evening was looking up.

As it turns out, we probably wouldn't have made it into the Datamost party if we hadn't bumped into Merrie and Nancy. Dave had had dinner there, then shown up stag for the Datamost party, with an invite, and didn't get in. We let the women carve the path, then followed in the swath they cut. It was that easy.

creative computing PARTY PROFILE

Name: Datamost Party

Type: Sexist.

System: Service by bunny only.

Format: Ample.

Language: Suggestive, breathy.

Summary: Magician made my wallet disappear.

Price: By invitation only, maybe not even then, still pay by the drink.

Manufacturer:
Datamost
9748 Cozycroft Ave.
Chatsworth, CA 91311

It was an amusing evening. We had the honor of being seated at a table adjacent to that of talented High Society ingenue Annie Ample, whose autograph I procured, so to speak, for young Owen. She was working for Datamost at the show, and as far as I could tell, was doing a very good job.

By the time the magician came to our table, I was speaking in tongues. He was extremely impressive, especially to a table of totally sloshed folks. I seem to remember that nearly every trick he did required paper money, donated by a volunteer, and that it seemed natural that he should keep the bill at the end. Hmmm. Could have been that something funny was going on. ☐

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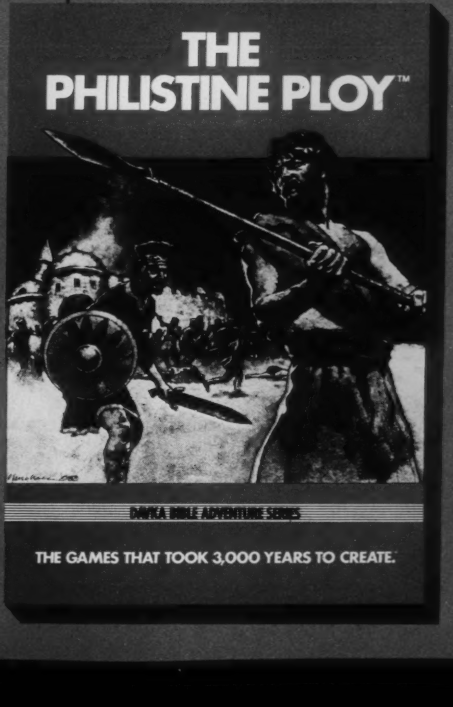
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Reflections On CES

1983 INTERNATIONAL SUMMER CONSUMER ELECTRONICS SHOW
TEXAS INSTRUMENTS

Mobs of people thronged into McCormick West, a new CES exhibit area for computers and video games.

Ken Uston

"Overwhelming." "Awesome." "Hard-to-believe." "Confusing." These are the words we're getting accustomed to hearing when Consumer Electronics Shows are described. The June 1983 CES was all of this—in spades. It was the biggest CES ever—over 3/4 million square feet of floor space, approximately 1000 exhibitors, and thousands of new products. One show daily, obviously overwhelmed, stated that the show had become so complex that they found it difficult to understand what it all meant.

After walking the floor for all four days and spending several more reading the literature and reflecting on the implications of the show, I have drawn five main conclusions.

- *CES has now graduated to a national media event with important Wall Street overtones.* Up until now, CES has been covered predominantly by industry publications. Yes, there have been reporters from *Time*, *Newsweek*, *The Wall Street Journal*, and other national media, but most show news was reported in the consumer electronics press. This has changed. It all started on the Friday preceding this year's CES, when *The Wall Street Journal* published a lengthy article about Coleco's Adam on the first page of its second section. (Coleco states that this was the first time the media was shown Adam, although some of their key accounts, such as Sears, were given previews.)

During the show, there was prominent coverage by important national media. In addition to almost daily reports in *The Wall Street Journal*, the highly successful new newspaper, *USA Today*, had first page CES articles. *Time* magazine devoted two full pages to what they called "The Software Hard Sell," a piece replete with information gleaned from CES. Press badges were in evidence everywhere; I even spotted a reporter from *San Francisco Magazine*.

Beyond just press coverage, however, CES product introductions had an effect on Wall Street stock prices. On the Friday preceding the show, Coleco's stock rose five points in anticipation of the introduction of Adam. On the following Monday, the first trading day during which CES was open, Coleco's stock went up another nine points.

This trend is probably a mixed blessing for us, the consumers. The management of most companies is evaluated primarily on the price of the company's stock, the principal measure of performance. Further, the value of company stock hits many stock-holding executives right in the pocketbook (can you imagine how much the net worth of Arnold Greenberg, Coleco's president, increased over the two days the stock rose 14 points?).

Thus company executives are going to keep a keen eye on the effect of their product introductions on Wall Street analysts at future CES's. This may mean that we'll see more "phenomenal" prototypes promoted with exaggerated claims, many of which may never get to market. As it is, many products introduced at CES never see the light of day (for example, Intellivision III, Odyssey^3, Ultravision, and the TI 99/2 are just four of the products heralded at the January 1983 CES which

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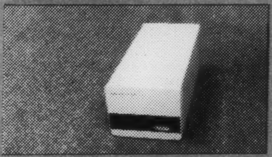

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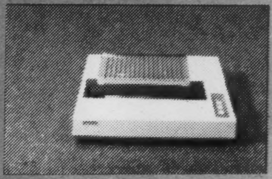

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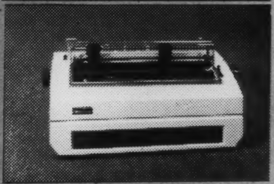

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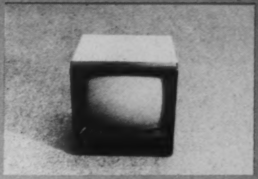

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have been quietly withdrawn). If this trend continues, widespread confusion will result. How will distributors and retailers separate the wheat from the chaff and know what products to handle?

• *Computer systems are being bundled.* In recent months, the strategy of most hardware manufacturers has been to sell their basic computer as cheaply as possible to maximize their installed base; they hoped to make money on peripherals and/or software. Coleco's Adam computer system, the undisputed star of CES, includes a computer, printer, mass storage device, and software for word processing and programming, all sold as a single product, in a single box. Mattel's yet-to-be-proven Aquarius system was shown selling as a single package, called COM/PAC (computer, printer, data recorder, and hand controllers).

This trend is good news for consumers, who can now put together a complete computer system with a single purchase, and at new lower prices. The 80K Adam with all accessories was announced at "under $600" ("under $400" if the user owns a ColecoVision). Not only does Adam reflect a new price breakthrough, but I suspect that by the time the system hits the market, it will sell for even less. (One week after CES, a precedent-setting ad was placed—no doubt in response to Adam—which offered "The Complete Commodore Computer System" at a new low price: $799 for the Commodore 64, disk drive, datasette recorder, and 17" color monitor). Watch for this bundling trend to continue.

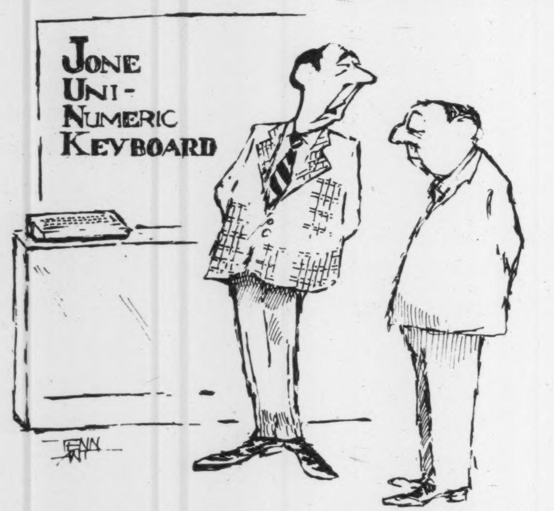
• *Software price cutting has started in earnest.* Up until this CES, most cut-throat discounting had been restricted to hardware, especially the basic computer. At CES, however, software price-cutting started to surface. To illustrate:

Atari created a stir with their introduction of four new computer systems plus an add-on converter for the 2600 VCS.

Datamost introduced a low-priced line of programs, called Gentry, for Apple and Atari computers, selling from $14.95 to $19.95.

Synapse Software announced a $19.95 line of Showcase Software for the Vic 20.

Emerald Valley Publishing Company, publishers of *99'er Home Computer Magazine* for TI 99/4A users, introduced a line of 99/4A cassettes called 99'er Ware that will retail for under $10.



"For obvious reasons they decided not to use an acronym."

Commodore introduced 70 new titles and a policy of mass marketing through lower prices. They offered a word processing program, *EasyScript 64*, for under $50, and they announced a version of Microsoft's popular *Multiplan* for the Commodore 64. At the start of the show, its price was quoted as "under $100"; by the last day of the show, the cost of *Multiplan* had dropped to "around $50." (Commodore's main thrust in 1983 is apparently going to be software. Their full-page ads at the show announced: "Last year we said we were going to be number 1 in computers. And we were. This year we're going to be number 1 in software." Might we read between the lines and conclude that profits from discounted Vic 20s and 64s have been seriously eroding?)

• *Everybody's trying to make everything.* Game software production to date has developed in four stages:

Stage 1—1980 and earlier: Atari made Atari games; Mattel made Intellivision games; and Odyssey made Odyssey games, and that was that.

Stage 2—1981: Activision, Imagic, and a handful of other manufacturers started making games for the Atari VCS.

Stage 3—1982: Over 30 companies made Atari VCS games. Some overlap was developing, with Mattel producing Atari VCS games and Activision announcing (but not showing) Atari computer games. The computer software houses (such as Broderbund) were making only computer software.

Stage 4—1983: Everybody is getting into the act. Atari is making software for the Vic 20, Commodore 64, TI 99/4A,

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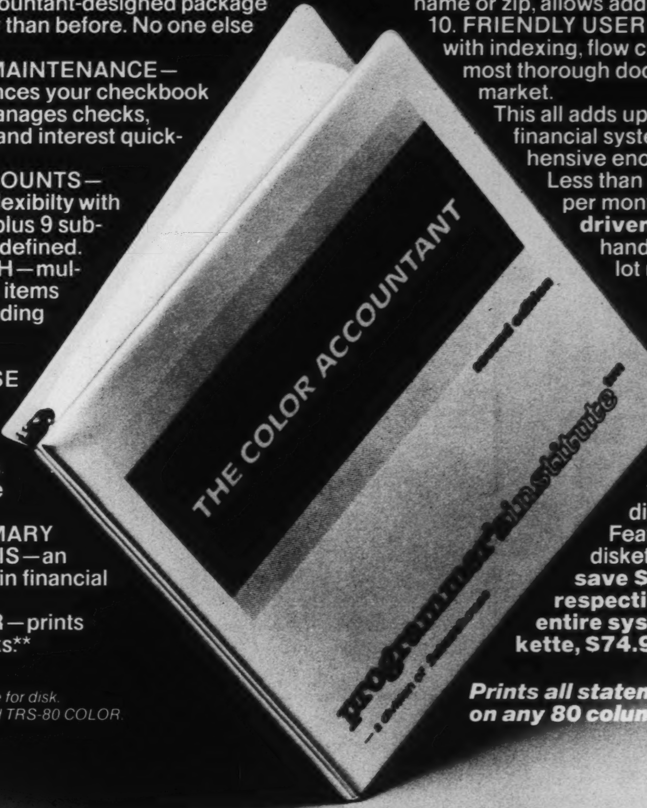

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Atari 5200 games were also attracting a great deal of attention. (Yes, that is Ken Uston in the center foreground.—Ed.)

Radio Shack Color Computer, Apple IIe, and IBM PC. Mattel is making games for the Atari VCS, Apple IIe, and IBM PC. Imagic is producing software for the Atari VCS, ColecoVision, Odyssey 2, TI 99/4A, Atari computers, Vic 20, and Intellivision. Spectravideo, Activision, Fox Video Games, and Parker Brothers are making Atari computer games. But the big news is that computer software and coin-op manufacturers are expanding "in reverse" and producing software for video game systems. Broderbund and Sega announced that they will produce Atari VCS games.

The good news is that our selection of software will be vastly expanded. The bad news is that this product clutter will require us to do far more homework (reading reviews, watching the game charts, testing the software) to ensure we make rational buying decisions.

- *Subtle signs of the shake-out are surfacing*. Many have been wondering how long NAP would continue to try to force their Odyssey systems on an unreceptive public. Well, they seem finally to have abandoned their ill-fated Odyssey³ system, which was publicized amidst great hoopla at the January show. I predict that the Odyssey² game system will also quietly slip from view, although it will go down fighting because of better software from third party manufacturers. (Imagic has produced an Odyssey version of their mega-hit, *Demon Attack*. They deserve plaudits because the games they have made for the Odyssey² are, in my opinion, superior to anything else available for that system.)

It was sad to stroll through the NAP booth. It reminded me of the glum, depressing Astrovision booth at the January show. (Astrovision did not show at this CES and has apparently thrown in the towel.) There were far more ColecoVisions at the NAP booth than there were Odyssey systems. Obviously NAP is stressing software development for ColecoVision. Prediction: by January 1984 CES, NAP will be primarily a software house.

Atari announced that Alan Alda has been signed as Atari's spokesperson for five years.

More evidence of the shake-out: for the first time, the show had a discounted game booth, where games from bankrupt companies were offered to retailers at huge discounts. Also available were unsuccessful titles abandoned by companies that are still in business.

Mattel has apparently given up on Intellivision III. The system was displayed in January in a private room to a select group of attendees. It was impressive with its remote controllers, stereo sound effects, and fabulous simulated 3-D graphics. The only problem: Intellivision III, not due out until late 1983, was made obsolete only one month later, by ColecoVision's 128K Microwafer, introduced at the February, 1983 Toy Fair in New York (this chip was subsequently abandoned, made obsolete by Coleco's own Super Games and by Adam). Mattel saw the handwriting on the wall and quietly withdrew Intellivision III.

Mattel has corrected the unacceptable rubbery Aquarius keyboard, replacing it with an improved Aquarius II version. Although the new product is much better, it may be a case of too little, too late. On a more optimistic note, Mattel has licensed some impressive titles, notably the addictive coin-op game, *Burgertime*. They are making home renditions of this game for Intellivision, Atari VCS, ColecoVision, Apple IIe, and IBM PC. I wouldn't be surprised if Mattel, too, eventually evolves into predominantly a maker of software.

Show Awards

As I wandered about the show, attended receptions and parties, and talked with company representatives, public relations people and reporters covering the show, I was struck by a number of interesting, humorous, pathetic, or ironic items, deserving of awards.

Most Notable Hardware Introduction

Coleco's Adam and the Atari XL line of computers. I won't dwell on these; they are covered extensively elsewhere in this issue.

Biggest Celebrity

Alan Alda. At a "special" press conference, Atari announced that Alan Alda has been signed as Atari's spokesperson for five years (despite Alda's association with the TV show, M.A.S.H., which was licensed as a video game by Fox Video Games). When asked by a reporter how much he was being paid, Alda responded, tongue-in-cheek, that he was so thrilled at the association that he is doing it for nothing. I was told by the same reliable source that tipped me off in advance about the secret Alda announcement, that it's a $10 million deal. Move over, Bill Cosby.

Most Interesting Celebrity (To Me)

Barbi Benton. Barbi signed autographs at the show. In previous years, when she was Hugh Hefner's girlfriend, we might have expected her at the *Playboy* booth. But times change, and Barbi appeared for Omicron Industries, a maker of protective covers for video and home computer systems.

Other celebrities included Bruce Jenner, winner of the 1976 Decathlon Olympic Gold Medal, who appeared at the Activision booth, playing one of their new games (*Decathlon*, of course) and

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Agricultural Management	Call
General Ledger, A/R, A/P, P/R, Inv	Call

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Sprite Master (access)	30
Neutral Zone (access)	35
Space Belt	19
Pet Emulator	30
Coco II (build your own games)	40
Vic Tree (programmers utilities)	75
Micro-Term (save to printer,disk)	39
Hesmon	35
Synthesound	45
Gothmogs Lair	30
Road Toad	15
Commodore Games	Call

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VIC 1600 Modem	95
VIC 1650 (auto answer, auto dial)	150
VIC 1525 Graphic Printer	225
VIC 1530 Datasette Recorder	65
VIC 1541 Disk Drive	249
VIC Switch (connect 8 64's or Vics to printer, dd)	149
PET-IEEE cable	33
IEEE-IEEE cable (2m)	49
Parallel Interface (Epson, Okidata, IDS, NEC)	70
Programmers Reference Guide	18
Verbatim Diskettes (10 per box)	26
Hes Modem	75
ADA 1450	149
ADA 1800 (new)	129
Numeric Keypad	65

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8K RAM Memory Expansion Cartridge	$ 40
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24K RAM	105
VIC 3 Slot Expander	27
VIC 6 Slot Expander	70
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Omega Race	30
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Transtar 130, 16 cps (auto load, wp features!)	769
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NEC 7700 Series	2350

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CBM 4023 Printer	395
Epson FX Printer, 160 cps	549
Epson MX-80 FT w/graftrax	Call
Epson FX-100	859
Okidata 82A, 120 cps (serial and parallel)	429
NEC 8023A (parallel)	429
Okidata 92	559
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Star Gemini, 15	499
Transtar 315 (hi-res, color)	575

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CBM Memory Expansion, 64K	259
CBM 8050, 1 mg. Dual Drive	995
CBM 8250, 2 mg. Dual Drive	1295
CBM D9060, 5 mg. Hard Disk	1995
CBM D9090, 7.5 mg. Hard Disk	2250
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signing autographs. There were some real macho men there, too. Chuck Norris, movie star and karate expert, signed autographs at the Xonox booth, and super muscleman Arnold Schwarzenegger also appeared. Spectravideo announced that Roger Moore would be their spokesperson. Moore apparently was too busy with his James Bond responsibilities to appear in person.

Finally, a brand new celebrity was born. F.R.E.D. (for Friendly Robot Education Device) appeared at the Androbot booth. F.R.E.D. supersedes his somewhat less sophisticated predecessor, B.O.B., a robot who made guest appearances at the January CES.

Best Party (Despite the Crowd)

Activision. Chicago hotels and taxicabs really made out during CES. As for restaurants, that's another story. They had to compete with the dozens of parties which have free-flowing alcohol and fancy hors d'oeuvres, usually capped off with a huge baron of beef—all complimentary, of course.

It's about time somebody told you about the Showstopping Party, The Event of the Year, The King of the Blasts—the Activision Chicago CES Party. First, a word about last year's party, to establish a basis of comparison. I have probably attended over 1000 company parties and receptions. *Never* have I attended a party as lavish, as well thought-out, and as carefully planned as Activision's 1982 Chicago CES festival. The gala was entitled "Rumble In The Jungle" to promote *Pitfall*, a game with a safari theme.

Activision was later awarded *Billboard Magazine's* Marketing Effort of the Year award for its *Pitfall* promotion; it is obvious, in my opinion, that the CES party was solely responsible for that award. Well-stocked bars and food stations lined the entire periphery of the huge Ritz Carlton grand ballroom. There were carnival games (with a jungle theme, naturally) in a large anteroom. The linens covering the dozens of tables were made of custom-made simulated lion skin. There were tropical birds and live monkeys, a steel band greeting guests in the reception foyer, and two rotating bands (from Chicago's Bob Young orchestra) who swung so well that the most indolent of guests couldn't help but try the frug.

> ***Guests were heard muttering words like "zoo" and "mob scene," as they elbowed their way through the jammed ballroom.***

This year we all expected another Cecil B. DeMille effort. Several days prior to CES, Activision sent out little red jogging bags announcing the party. The theme: the Olympic Decathlon, to promote Activision's new game of the same name. The jogging bag was filled with aids for the athlete: Theragran-M vitamins, sun screen, salt tablets, a head band, and an ace bandage. A map of Chicago was considerately included as well.

Barbara Rose, the planner of Activision parties, has become the Perle Mesta of CES. Barbara did her normal fabulous job in organizing this year's party. The walls of the ballroom shimmered with Olympic bronze, silver, and gold metallic streamers. The game room was filled with humorous pseudo-decathlon events, including turtle races and slinky contests. The same rotating bands played the same swinging music. There were 18 bars, and the food was varied and creative.

Now the bad news: 3000 guests were expected; about 5000 showed up. Guests were heard muttering words like "zoo" and "mob scene," as they elbowed their way through the jammed ballroom. Despite the hordes, nearly everyone stayed to the bitter end. To Activision's credit, there were so many bartenders and food-servers that they stood idly by, waiting to serve the thousands of guests.

The Activision people are in a quandary. If they tighten up on admission for next year's party, they may insult some of their "friends." If they don't, another crush will result.

My advice: No, it's not to rent Wrigley Field. Instead tighten up on admissions security and check invitations. A party enjoyed enormously by 3000 is far preferable to a party *not* enjoyed by 5000 (bruised egos among the unadmitted uninvitees not withstanding).

Best Carrying Bags

Epyx. The big, black Epyx bags were the largest and most convenient of the many bags handed out at CES. This fact did not go unnoticed. Even though Epyx brought 10,000 bags to the show (and feared they'd return home with boxes full), they ran out on the second day. (United Airlines stewardesses, seeing all the big black bags on flights departing Chicago on the last day, no doubt concluded that there was an Epyx convention in town.)

Prettiest Models

The Datamost Stickettes (their name, not mine). Dave Gordon, Datamost's founder and the leading maverick in the industry, managed to hire the most attractive models at the show. They are from Chicago, and Dave promises that they will be flown to Vegas for the January, 1984 CES. Dave also rented an army half-track and invited selected friends for a ride in it, prior to his mega-party at Chicago's Playboy Club.

Most Optimistic Statement

Timex. It was reported that Timex expects its 2000 series to be more popular than its 1000 computer (about 1 1/2 million sold). What with price cutting, improved hardware introductions, and limited 2000 software, I'll eat my hat if that comes true.

Most Wishful Thinking

Sloughing off Videotex. Industry analysts were quoted as saying that Videotex will not hurt software sales. Videotex services, the transmission of video games and other software via telephone lines into consumer homes, are growing rapidly. Mattel, Times Mirror Corporation, and Control Video Corporation (GameLine), to name just a few, are aggressively entering this field. Soon we should be able to turn on our TVs, make a selection from a menu of dozens of the newest games, and play away—for a small fee, of course. How can this *not* hurt the sales of software?

Worst News Release

Frank Barth, Inc. Barth would have us believe that "challanges," "emphasizeng," and "discoteque" are legitimate words, that commas should separate sentences, and that the correct spelling of one of their client's names can be either Datamost or DataMost.

Best New Games

Activision, Atari, Vectrex (GCE). Activision's *River Raid* for the Atari computers is even more fun to play than the enormously addictive Atari VCS version. Atari's *Dig Dug* (for the 5200) and Vectrex's *Star Castle* are, in my opinion, the first home games that are every bit as good as their coin-op counterparts.

Most Infuriating Policy Statement

Texas Instruments. Texas Instruments took out full-page ads announcing that it will use its patents to prevent unauthorized third party vendors from selling 99/4A software. Several companies, including Datamost and Sirius, have expressed dissatisfaction (and that's putting it mildly) with this policy, which many view as shortsighted.

Some industry analysts simply conclude that TI planners have disregarded the industry axiom that "software drives hardware." I think it goes beyond this. More likely, discounting has dried up profits on the sale of 99/4As (remember when it came out for over $1000 with a color monitor; now the machine is available, without monitor, for under $100). I would guess the reaction of TI officials is, "If we can't make money on the 99/4A, let's get it from peripherals and software. We can't make money on software unless we get a piece of the action on all sales." Hence their restrictive software policy. Now TI is stuck. They are probably not making a dime on 99/4A sales, and

- if they restrict software development, their computer will fall behind as tons of software is produced for the Vic 20, the Atari computers, and the Commodore 64 (as I said before, everybody's making everything).
- if they don't restrict software development, they will probably lose money as they try to compete with outfits like 99'er Software who are selling packages for under $10.

I wish I could say I had the insight to have written this before TI's stock plummeted 50 points in two days (after an announcement of $100 million or so loss for the second quarter). I didn't. But I will predict this: TI is caught between a rock and a hard place. No matter what they do, things look glum. I would guess that:

- Not many third party vendors sent telegrams of condolence to TI when their stock dropped.
- TI's troubles have only just begun.

One final prediction: January 1984 CES will be even more "overwhelming," "awesome," "hard-to-believe," and "confusing." And just as much fun. □

> ***TI is stuck. They are probably not making a dime on 99/4A sales.***

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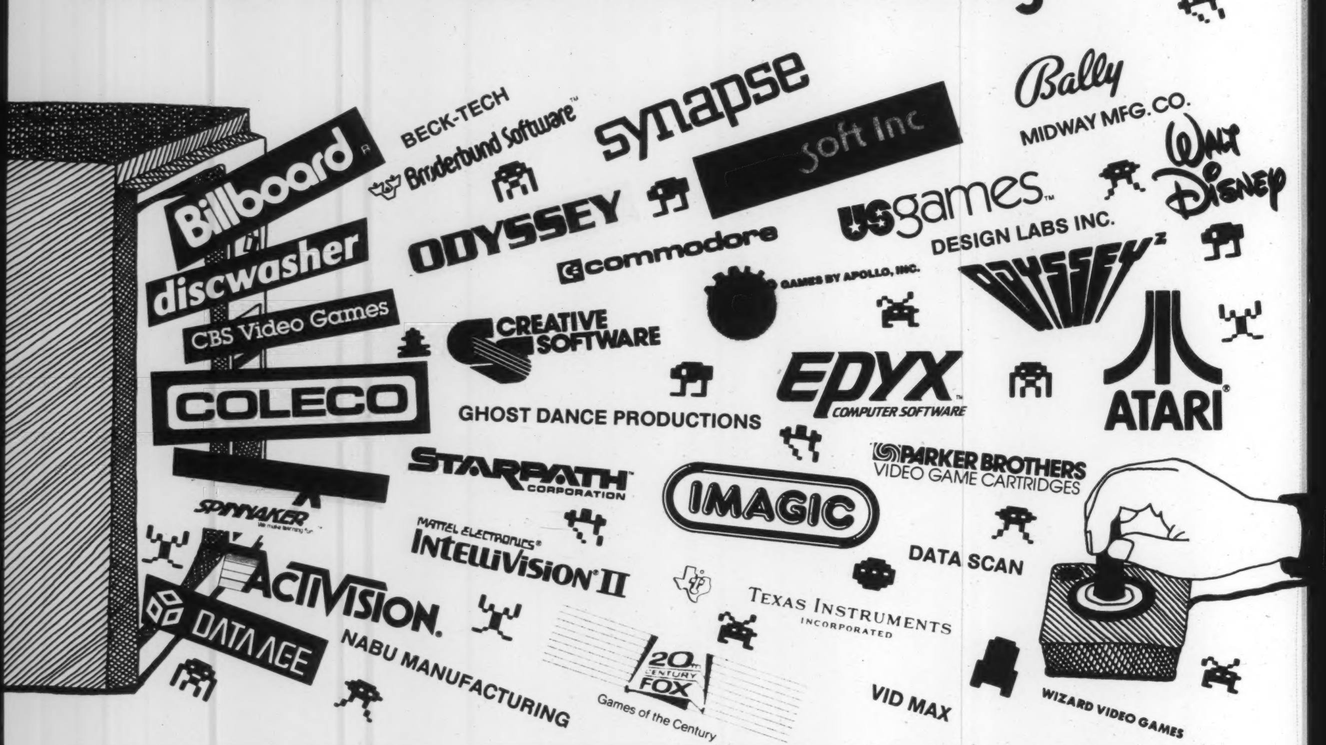
A Report From The First Video Games Conference

Whither The Video Games Industry?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WIZARD VIDEO GAMES

Ken Uston, our editor-at-large, reports from San Francisco, where a video games gathering, called The First Video Games Conference, was held in April. Here is his summary of the conference, followed by several observations.

Ken Uston

It's nice living in San Francisco. So many of the computer shows are held here—due, no doubt, to the charisma of Our City and the proximity of Silicon Valley, just 40 miles south. In just several months, we have had the CP/M Show, the West Coast Computer Faire, and now The First Video Games Conference. It saves a lot of time sipping martinis on airplanes, to say nothing of the cost of the airfare and hotel rooms.

Monday, April 18

The advance P.R. for this show said registration would be held from 11:00 a.m. to 7:00 p.m. today. Guiltily, I got up at 3:00 p.m., played a few games of *River Raid,* and taxied over to the Westin Miyako Hotel in the middle of San Francisco's Japanese Center.

I need not have felt guilty. Nothing was scheduled for today except for registration and a cocktail reception—no doubt an accommodation for the long distance travelers from the East. The "real stuff" starts tomorrow morning at (ugh!) 9:00 a.m.

This conference is not for cheapskates. The registration fee is a hefty 350 bucks. The event is sponsored by *Billboard Magazine* and an industry newsletter called *Video Marketing Game Letter,* an annual subscription to which is $395.

The affable hostess of the show, Kris Sofley, told me there'd be about 150 people at the conference. I was given a press pass and a free copy of *Billboard.*

Billboard is going whole hog for the video game dollar. Their weekly has pages and pages of video game evaluations, industry news, ads from Atari and Activision, and lots of other video stuff. In fact, the information was so impressive that I laid down a hundred dollar bill for a year's subscription (the Show Time Special—the normal rate is $125).

At the cocktail reception, I talked to Elliott Dahan, director of marketing of Creative Software, who tells me they have a *Choplifter* cartridge for the Vic 20. I'm rooting for them since, as I'm sure everyone knows, *Choplifter* is a fabulous game. But I must admit to being skeptical. Is it *really* possible to get the many graphics elements of the original *Choplifter* on a computer with less than 4K RAM? (*See the review on p. 150 of this issue.—Ed)*

One highlight of the party was Benny, a friendly Japanese bartender who told jokes and poured heavy duty drinks. I tried my best to drink $32 worth (the cost of the reception for my girlfriend, who's on the wagon, and myself). Even for me, that was hard to do.

Tuesday, April 19

Keynote Address

Jim Levy, President and CEO of Activision.

Mentioning that *Fortune* magazine referred to Activision as the "granddaddy

◇ indicates price decrease
● indicates new item

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Apple II-E STARTER SYSTEM	$1715◇
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Kaypro II + – 400K drives	$1875
NEC APC HO2 – green/2 drives	$3050◇
NEC APC HO3 – color/2 drives	$3750◇
Osborne Double Density	$1735◇
Slimline S-100: Z-80, CP/M, 64K, 2 MByte drives	Under $2000
Syscom II - Apple II Plus Emulator – not a #@! kit	$595◇

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Epson MX-100 – w/Graphtrax	$685
Epson FX-80 – 160cps, friction, sprocket	$565
Brother HR-1A 17cps daisywheel, enhanced	$715◇
F-10 Starwriter – 40cps. Diablo codes	$1195◇
Graphic Printer – 50cps, 5 × 7 matrix, sprocket	$199◇
Mannesmann-Tally 160L – uses Daisy software	$775◇
NEC 3550	$1965
NEC 7730	$2145
Okidata – uses standard spool type ribbons	
u82A – serial/parallel/friction/sprocket	$405◇
u84AP – 200cps, 132 column, parallel	$955
u92 – 160cps, 80 column, parallel	495◇
u93 – 160cps, wide	$895◇
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Prowriter II (C. Itoh 1550A) - wide carriage	$665◇
Gemini 10 – 80 column, 100cps	$325◇
Gemini 15 – 15" wide	$455◇
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Amdek 310G - for IBM monochrome adaptor	$175
Amdek 310A - amber for IBM	$185
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BMC 13" Color - composite	$294◇
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Dynax 12" Green (GM-120) - BEST BUY	$129
Dynax 12" Amber (AM-121) - 970 line resolution!	$145
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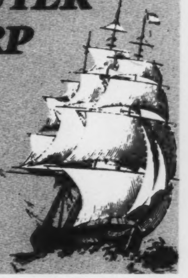

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OSMOS 4 - Disk Format/Convert - read/write 20 formats	$215
OSMOS 5 - 80 Column - select 52/80 display	$235
OSMOS 6 - Drive Diagnostics	$29

of the industry," Jim gave a brief history of the video game industry, which had its beginning "all the way back in '79."

Here's a summary of Jim's main points. (Note: Rather than continually say, "Jim said . . . ," etc., I have written this article in the same way the speeches were presented. Note also that I'm reporting the points as made by the conferees, even though I may have disagreed with what was said.)

We can all ensure manageable industry growth through mutual respect and acting responsibly.

In '79, there were four main competitors in the industry, all of whom manufactured both hardware and software: Atari, Mattel, Odyssey, and Bally Arcade (subsequently renamed Astrovision). There was a narrow distribution channel, about 50 to 60 wholesalers and five to six thousand retail outlets. Not many believed in the long-term growth potential of the industry. About one and one-half million homes had some sort of game system, and about three to four million game cartridges were sold that year.

1980. Four momentous events occurred in 1980:

- Atari finally put it together, coordinating their production, marketing and distribution. Things jelled for them.
- *Space Invaders* came out, the first home game mega-cartridge to hit the market.
- George Plimpton appeared in TV and other ads and pumped life back into a nearly dead Intellivision. This prevented the industry from being a one-horse race.
- Activision was born and launched the software industry. Before Activision, the industry was all bundled up—the hardware and software manufacturers were the same companies.

At the end of the year, Bally pulled out. The industry grew to 100 wholesalers and about 10,000 retail outlets. There were still questions about whether the video game industry was anything more than an electronic hula hoop.

Christmas 1980 saw a sell-out of all available software. Demand far exceeded supply. There were then about 3½ million systems in U.S. homes.

1981. During this year, there was a firestorm in the industry. Activision's delivery capacity grew by 1000% in six months. Industry people estimated that fully 25% of industry demand was going unfulfilled.

By the end of the year, everyone wanted in. Producers could sell all the game software they could make. But a major change was coming, as numerous software companies jumped in, including CBS, Imagic, Coleco, Quaker Oats and 20th Century Fox.

1982. This was the year that the industry grew up in a hurry. Fifteen million hardware units and 65 million software units were sold. $1½ billion in software alone was sold at the retail level (equal already to half the volume of the record business).

Two hundred new titles were introduced, and the industry spent $150 million in advertising. Many products were fighting for limited shelf space. The industry went licensing crazy. The age of home computers got underway as the Vic-20 and the TI 99/4A became available for around $200. Due to intense competition, many new games, as has been quoted, "started slow and tapered off from that level."

*"Of course I know the value of a dollar, Dad. . . four games of Q*bert."*

In three years, the industry grew from infancy to young adulthood. It takes most industries 20 to 30 years to do that.

1983. In 1983, the central question is: "How to maintain profits in a highly competitive market?" It is confusing to retailers (what to stock?), to wholesalers (what role to assume?), and to manufacturers (what product to make and how much; which hardware to support; how to forecast market demand).

We can all ensure manageable industry growth through mutual respect and acting responsibly. The burden is on the manufacturers particularly, to create great product. The retailer must support strong product provided by the manufacturers and must manage his shelf space to ensure as many good titles are available to the consumer as possible.

Negative actions include:

—Manufacturers who refuse to take back their mistakes.

—Wholesalers who serve solely as order-takers.

—Retailers who do not overcome their fears and refuse to stock up because of bad titles that they were stuck with in the past.

My advice: if you are afraid to take risks, you had best walk away from the industry. But if you do, you will kick yourself. I see 300% growth over the next five years for our products.

The central points of my address:

- The industry is a major one already and will grow to become a major form of entertainment.
- The industry can either provide prosperity for those involved or become a crazy roller-coaster ride.

A big problem: which system to program for.

- Our destiny is in our own hands. The industry is no place for the fast-buck artists or the faint of heart.

We're going to need reason, discipline, dedication and a sense of responsibility.

Session: "The Designers: A License to . . . "

Malcolm Kaufman, Kaufman & Associates (a firm that seeks out and represents video game creative talent).

The main characteristics of the industry are:

- Software is becoming far more sophisticated. The artist's palette is increasing (with such things as better sound and graphics chips).
- Players are getting more sophisticated and expecting more from the games.
- Technology is the driving force of this industry (Note: many speakers reiterated this obvious but important point during the conference). The key for designers is to stay abreast of technology (the new chips, etc.) Also much design activity is taking place outside the corporations (in the basements and attics of independent designers).

Steve Beck, Beck-Tech (game designers).

I guess you could call me an artist turned game designer. In filling out the last word left blank in the title of this session, I suggest "The Designers—A License to *Create.*"

I am optimistic about the industry. There is an analogy between this industry and book publishing (50 books per day are now published), in which a few hits carry the industry.

Designing has been a one-man, totally obsessive kind of activity. But with larger game programs coming, it makes better sense to organize teams in designing, rather than to conduct one-man efforts.

A big problem: which system to program for. There are now 10 million VCSs, 4 million Intellivisions, and one million Coleco-Visions in the home. Another problem is the need for recoding; it is difficult to convert a program from one system to another system. (Beck then displayed a video game which is ecologically oriented, to create a "sense of values," a Save The Whales game.

The programmer is defensive about modifications to his creation.

Robert Brown, Starpath Corporation (the technical manager behind the Supercharger).

Some problems in the home video design area:

- The industry has evolved into one similar to the hit record business; supply has caught up with demand.
- Even hit game titles don't ensure success.
- The Big Question: how to generate hit games. It takes creative people, dedication, hard work, and dumb luck.
- How to find the best game designers.

Attributes of the best game designer:

- He loves to play video games; he has probably spent hundreds of dollars on the coin-op games.
- He is a home computer freak.
- He has written games in assembly language.
- He could be either a high school graduate or have a Ph.D. in computer science.
- He is often young—17 or 18 years old.
- He writes code in a prolific manner.
- He can debug code by watching game play on the screen.
- He is creative; he likes to and knows how to use new graphics.

In short, he is a special kind of genius.

Jeffrey Corsiglia, Data Scan (a former Mattel Toy Designer).

Once a designer begins to do a game,

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he disappears from sight. He becomes totally involved and is out of sight for months and months and months. When he sees garbage on the screen, he is afraid he is going to be faced with utter failure. He needs input from others. The design of video games is a collaborative effort.

I would liken game design to the creation of toys. The organization of creative ideas is essential to the toy industry.

Not many programmers visualize the finished game when they begin. Story boards are used in game design like flowcharts in programming.

Kyle Fields, Design Labs Inc.

Fields is 24, has designed games for seven years and is president of his own coin-op game designing company.

Programmers and managers see things differently:

- Timing: The programmer wants time to do the game, to make changes, to incorporate new ideas, to try things. The manager wants to get the game done and get it to the market fast.
- Pace: The programmer will sometimes accomplish a great deal in a really short time as he lives, breathes, eats, and sleeps the game. Or he may run into a four-day mental block. The manager checks on program progress and goes crazy when he sees his programmers just sitting around staring off into space.
- Game changes: The programmer is defensive about modifications to his creation. He is often too close to the game to see the forest through the trees. The manager could kill overly-sensitive programmers who resist minor changes to the game.
- The next game: After a six-month intensive effort, the last thing the programmer wants to hear about is doing another game. He needs time to recharge. The manager wants the programmer to get going on a new game as soon as possible.
- Working environment: The programmer wants flexible hours and a relaxed place to work. He may want to play guitar during his creative block periods. The manager wants a structured work place with time clocks, etc.

The key to these disparities is an open line of communication between programmers and managers.

In the future, games designed by teams will become more common. I stress again that there must be a *relaxed* atmosphere in which the programmers can be creative.

There will be a shift to third generation game systems.

Session: "The Wall Street Game: Rebuilding Confidence"

Michele Preston Rothschild, Unterberg, Towbin (industry analyst).

What is the question to which the answer is "Gandhi, Lassie, and the *ET* cartridge"?

The question: "Name two hits and a dog." In other words, the *ET* failure showed that you can't fool the people (Note: *ET* was designed in six weeks and rushed to the market).

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"I have a gut feeling, Professor Snodgrass, that we may have to revise our thinking about the paleolithic era."

Wall Street opinions:

- ColecoVision is perceived as the best system, creating problems for Atari and Mattel.
- There are too many companies making too many cartridges. A shake-out is expected.
- Wall Street was wrong on who were the shakers and the shakees. After the surprise of December 8, 1982 (when Warner shook Wall Street with dramatically lower earnings figures), analysts are skeptical. They view Atari and Mattel as two battleships, and the analysts are dodging their bombs. Wall Street is becoming even more nervous. They think the video game market is finished and will be replaced by the market for cheaper home computers. The cheapest home computer will be the winner.

Personally I believe that the video market is OK. Thirteen million hardware units will be sold in 1983, versus $9\frac{1}{2}$ million in 1982. Sixty-five million software units were sold in 1982; estimates are that 100 million will be sold in 1983.

There will be a shift to third generation game systems (ColecoVision, Intellivision III, and the Atari 5200).

I'm positive on Activision.

I'm negative on the home computer hardware market. It's going to be difficult for manufacturers to be profitable, especially because of recent Commodore and TI price decreases. The companies are irresponsible to do this.

I expect home computer domination at the June CES and a major Japanese home computer introduction.

Comments on the companies:

Atari will come out of their problems of 1982. Atari's basic problem was complacency. They had little competition and had enormous success with VCS *Pac-Man.* Another problem was managing their phenomenal growth. Atari is not competitive in home computers at the low end, although the Atari 800 is a great computer. A whole new spate of products from Atari is expected in 1984.

I'm *very* postive on Coleco. They will introduce the most aggressive home computer module at the June CES. It will surprise many. They'll have a keyboard for ColecoVision, a new storage device (128K) and a low cost printer. And all this for $200 wholesale. This will help to sell ColecoVisions and allow their owners to upgrade.

Lee Isgur, Paine, Webber . . . (securities analyst).

The Atari December 8, 1982 debacle is similar to RCA and Victrola in the late 30's when people bought the Victrola and bought only RCA records. In the mid 40's, this changed. RCA's soft-

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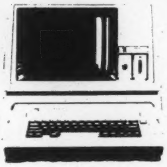

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ware market share dropped dramatically, as Decca and others came in.

In our industry, as college presidents say to incoming freshman classes, "Look to the right and look to the left. One or two of you will not be here in three or four years." This is the case in our industry. But the industry will be bigger and better off. Jim Levy's 300% five-year growth figure is conservative. One reason for optimism is that the entertainment/education/utility software are all intersecting in the game area. An example is the typing games that make learning to type really fun.

In looking at a company, Wall Street wants stability, growth, and dividends. Thus, your company may have the greatest game. But without a good track record, forget about Wall Street support. But if you have a good six or seven year track record—with no loss years—you will be viewed favorably. You may not be the most creative company, but Wall Street will be willing to finance you, because they are looking for stability.

As this industry matures, more companies in it will secure financing and join the stock exchanges. It is OK for company people to wear sandals and jeans, but you had better hire a business manager with a three-piece suit to talk with Wall Street.

Some industry forecasts: There are now 235 million TV households in the world, with 70 to 80 million devices of one type or another (game machines, computers, VCRs, etc.). I see 300 million TV households by 1990, and the devices (including ones yet to be invented) will grow to be installed in half of the TV households—which equates to 150 million units. Mathematically, this amounts to a 30% annual growth rate between now and 1990. And these devices will all need software.

As this industry matures, more companies in it will secure financing and join the stock exchanges.

Software people must adapt to this market. If you do, you will succeed. If you don't, you will fail.

Session: "Computer Software— The Independents"

The moderator of this session, attorney Edward Hearn, noted that the industry shake-out has begun. He noted DataAge, U.S. Games, and Apollo as industry casualties.

David Gordon, Datamost (software company).

There are two different software markets: the VCS market and, equally important, the home computer market.

Jim Levy did not found the industry, contrary to popular belief. If Activision is the granddaddy of the industry, I must be the godfather.

Software is moving toward the home computer arena. The small independent software house has the edge over the big companies for two main reasons:

- There is no need to go to 22 people to get a game approved.
- We hire child labor.

John Loveless, Synapse (software company).

A *lot* of home computers are going to be sold due to low price. You can now buy a Vic-20 at Toys 'R' Us for $88. There is strength in breadth. Software houses shouldn't make software for just one computer. Synapse now has 20 games for four home computers.

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We are working on cooperative-type games which require two, three, or four people to play them. This will be a change from today's environment, in which home computer players are basically in "an anti-social mode" (playing alone).

I define piracy as the act of someone taking a program designed by another and selling it. This is not what is happening. The copiers are giving the programs away. This is because the big challenge—the "game" if you will—is to break the code.

This is a serious problem. There are 80,000 copies of Synapse's best-selling game, *Shamus,* out there. Yet Synapse has sold only 40,000 copies. It's getting worse. Unauthorized copies are now showing up only three to four weeks after release. Piracy is a big problem with home computers; it didn't exist with the Atari VCS games.

(Gordon then commented on the piracy issue as follows: Our company now has a full-time man who changes the protection scheme every quarter. I see a big future problem with piracy—a huge problem.)

Billboard Video Game Award Winners

On Tuesday evening, an awards dinner, complete with vintage 1971 wine, was held. Two awards, Video Game of the Year and Video Game Company of the Year, were based solely on the *Billboard* game charts during the period from September 1982 (when the charts were started) until March, 1983 (I was told, by the way, that *Billboard* would begin charts for the home computer games in their June 11, 1983 issue). The other awards were determined by polling a "Blue Ribbon Committee."

Activision gave Pitfall one of the most remarkable product launchings ever held.

And the winners are . . .

Video Game Marketing Award: Pitfall by Activision. This award is for good packaging and good promotion. Activision gave *Pitfall* one of the most remarkable product launchings ever held (the phenomenal party at the June 1982 CES in Chicago); *Pitfall* was also supported by outstanding marketing.

Video Game Designer of the Year: Ralph for designing *Demon Attack* (Imagic). Fulop spent two years at Atari, where he did *Missile Command.* He designed *Cosmic Ark* and *Demon Attack* for Imagic.

Computer Game of the Year: Choplifter by Broderbund (designed by Dan Gorlin).

Video Game of the Year: Donkey Kong by Coleco.

Video Game Company of the Year: Atari.

Video Game Super Star of 1982: Arnold Greenberg, president and CEO of Coleco. This award is for the introduction of ColecoVision, a key development in the history of the industry. Further, Coleco was the best performer on the New York Stock Exchange in 1982.

Wednesday, April 20

Session: "The Next Generation: New Game Hardware and Software"

Doug Carlston, Broderbund Software.

I anticipate that more people will buy video systems and home computers for dual purposes. They will play games, but they will also use education programs, word processing, etc. They may even get their kids to learn how to program so they can go out and become video millionaires.

I see more segmentation of the market, more specialization of product lines. Because of the piracy problem, I do not expect floppies to dominate the market. I see a move to cartridges, the prices of which are already coming down. Any manufacturer that puts out a home computer without a provision for some type of cartridge interface is out-of-his-mind.

There will be increased depth in programming. This, in fact, will be the key to success in the future. As an example, the popularity of Pitfall was due to the enormous depth of the game. We will see games that accurately reflect the complexity of human experience—similar to the popular daytime TV shows, the soap operas. The soaps create a world which interests people enough to pull them into it. We will evolve to where games will create worlds—where a new cartridge, which is a continuation of the game saga, will come out every six months or so.

Gene Fairly (Videodisk Publishing) and *Marty Perlmutter* (Ghost Dance Products).

This joint presentation included a video display of the *Mystery Disc* by Vidmax, one of the top selling video discs today.

The disc presents a murder mystery. The object of the game is for the player to discover the murder, the motive, and the method. The disk contains a movie with two sound tracks, each of which provides clues to a murder. The game can be interfaced to Commodore, Apple, and Atari computers.

We expect more elaborate video discs; they will interact with computers.

A private detective interviews a series of suspects, including, of course, a butler. There are 16 completely different paths through the mystery. The disc also contains a file of information about the murder and a series of still pictures which are clues; clues are also given through audio effects. When the player makes guesses, the program tells him if he is right or wrong (in the latter case giving him more clues).

We plan to meld video discs and video games along the lines of *Mystery Disc*—in disc format. We will experiment with sound effects (such as capitalizing on the two sound tracks) and other features, such as slow motion and playing with the frames of the disc for word games and puzzles.

We expect more elaborate video discs; they will interact with computers. The big advantage of the disc format is that photography can be used (still shots and movies) instead of graphics. Real actors—even well-known celebrities—can be hired. We are considering multimedia possibilities, such as doing these on TV shows. We are now making new games with music, puzzles which contain hundreds of clues, and adventure games.

Alison Frankley, Wizard Video Games.

The tone of the conference is that we are seeing just the tip of the iceberg. There is room for both the dedicated

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Video Games, continued...

game machine and the home computer. But the home computer will take over in 1984.

Multi-player programs will get much wider use in schools. They provide interaction, they make learning fun, and they create competition between students.

Wizard Video is working in this area. Our first educational games are coming out in a few weeks, formatted for four players.

Competition is increasing. It can be combatted by targeting software at specific audiences, such as Odyssey's focus on educational games. Educational software is the way to hook parents into justifying the purchase of a home computer.

Bruce Maier, Discwasher Inc. (audio, video, and game accessories).

Discwasher is involved with the Point Master joysticks, which are doing well. The company is now preparing seven different products—all video game system and computer game accessories.

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Several factors made the hi fi industry grow: It was socially acceptable, especially among college males and their peer groups. Hi fi focuses on people with money and those who like gadgetry; gadgetry in turn leads to emotional involvement. If you spend hours fooling around with your hi fi, you grow attached to it.

The computer game market has grown more in only five years than the hi fi industry did in 20 years. It is hard to say why, but part of it is the emotional involvement of the consumer.

Our industry will become title driven and author driven. A subculture status will build up surrounding certain authors. The title driven effect is reflected in the video game, *Journey,* which is built around the well-known rock group.

There are basically four kinds of accessories:

- Volume driven accessories, such as joysticks.
- Software driven accessories—products needed to allow the user to use the volume driven accessories. This category will become more important in the future.
- Auxiliary peripherals—these include products to make joysticks work better and products such as trak balls. We'll see lots more of these.
- Special formats, such as flight simulators. These accessories tend to be expensive. They include dedicated products that go with a specific model of computer. They also include the interface modules, so that the user can plug, for example, his ColecoVision into an Apple.

Session: "Teledelivery — Threat or Savior?"

Richard Adler, Institute For the Future.

Teledelivery is today more of a concept than a reality. Effectively, it is the sending of software into the home through a medium such as cable TV. Teledelivery is the result of the intersection of three technologies: video games, cable TV (now in one-third of all U.S. households), and information retrieval.

Gary Moskovitz, Mattel.

Mattel has introduced Play Cable, a service to cable customers. It was founded in early 1980 as a joint venture between General Instruments and Mattel.

The first service to be provided is the delivery of video games to cable users. In November 1981, Play Cable could be sent out to users of 13 different cable systems. There were $\frac{3}{4}$ of a million cable subscribers who could select the Play Cable service. The company goal was to get a 5% Play Cable service. It was not achieved because of poor marketing. The current effort taking place in 1983 (called "phase 3" by the company) reflects improved marketing.

A DEC minicomputer transmits games via eight FM frequencies. The subscriber has an Intellivision system and a special Play Cable adapter. In the joint venture, Intellivision and the software are made by Mattel, and the Play Cable adapter is supplied by General Instruments.

Twenty Intellivision games are available to the subscriber at all times. The user turns on his TV set and the adapter, and the game menu is displayed on his screen. He pushes a button to select the game he wants to play. The game loads in 5 to 10 seconds.

The most common user charge is $12 per month for 20 games. The Intellivision unit is owned by the subscriber; the adapter is the property of the cable service.

Larry Dunlap, The Games Network.

The Games Network consists of 40 employees in Los Angeles—talented, dedicated people who work around the clock.

The Games Network is a cable-delivered, board-based game service. Twenty games per month are offered. Installation charges are $15 or less. Games are delivered to a 64K subscriber unit (which can be modified to handle Apple software). The Games Network is not a game developer or designer; we are game packagers.

The games are 25% arcade, 25% education based, 25% traditional, and 15% strategy; the rest is miscellaneous.

The Games Network is not yet on line. We do have agreements with over 400 cable systems offering a potential of over 5 million subscribers. The Games Network currently "represents" over 1000 game programs for future transmission.

A successful test was conducted in Fullerton, CA, with 100 subscribers. We found the big name doesn't make the game; it's the playability. The Games Network now has a Tokyo office and is opening a New York sales office.

We don't feel that the Games Network is either a threat or a savior to the industry. More accurately, it provides a missing link.

I feel that people who think they are in the cartridge business will lose.

Chris Wallace Nabu Manufacturing.

Nabu was formed in July, 1981 and does the following:

- Builds a 16-bit business mini computer.
- Manufactures lottery terminals for sale in Mexico and Canada.
- Owns a chain of retail stores in Canada called "Computer Innovations."
- Makes a unique 64K personal computer for cable use.

The subscriber calls a cable service to get software downloaded onto his personal computer. Software includes games (35 games are programmed to date), education, information, home finance, and spread sheets. Most programming is down in-house by Nabu. Nabu is now negotiating for cable rights for "solid gold" games (the megahits).

The long term plan is to have the software developed by third party manufacturers.

David De Jean, Times Mirror Videotex.

Videotex conducted a system trial in March, 1982 with 350 users in southern California. The service provides information and other data to the home, including news and weather, restaurant guides, home banking (to pay bills), a bulletin board, the transmission of birthday and other electronic greeting cards, electronic mail, airlines guides, and games. The games are not real-time hand-eye coordination games (which are not now technologically feasible with Videotex), but rather are card games, mazes, adventures, and logic/deduction puzzles.

We see enormous growth potential in this business. And we will be competing with people who sell video system and home computer software.

I feel that people who think they are in the cartridge business will lose. You must be in the *games* business and then decide how to make money on the games.

Ted Chislett, Rogers Cable Systems Engineering.

Rogers is the largest cable operator in Canada, with two million subscribers.

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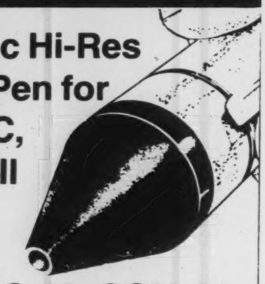

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Video Games, continued...

The advantages of teledelivery are:

- There is no need for physical inventory.
- It is timely; new hits are available immediately.
- It is convenient to users.
- Subscribers review and test the programs for immediate feedback.

The disadvantages of teledelivery are:

- Security problems—piracy at home.
- It is difficult to use software that requires the user to have documentation (such as a VisiCalc manual).

Currently all service is one-way, from the cable operation to the user. In the late 80's, we expect to have two-way service.

Rogers has over 50 channels. One channel alone can send out 900 16K programs every three seconds. The average user access time is about 15 seconds, which is comparable to the access time of floppy disks.

A downloading trial was conducted in April, 1981. The user could buy the game console for $399 (which could be financed) and pay a $12 per month service fee. The cable users flocked to be in on the trial; in fact 300 had to be placed on a waiting list.

> ***For computer software, print is the key to advertising.***

The entry point into this business is games. Fifteen games were offered during the trial. Later other software, such as education and home finance, is planned. But in these latter categories, the documentation requirements increase. A further problem is created by the need for a hard copy in some of these applications.

Session: "Clash of the 80's: Personal Computers Vs. Game Consoles

Jeanne Dietsch, Talmis Newsletter.

Of the video game software purchased, 99% is used for entertainment; 1% is for other uses. This contrasts sharply with home computer software. For example, Vic-20 software breaks down as follows:

% of $ Spent for Software	Use
36%	Entertainment
22	Utilities
17	Education
12	Word processing
11	Home finance
2	Other

The dollars spent per year on software for home computers varies significantly by computer as follows:

Computer	$ Spent Per Year On Software
IBM PC	$550
Apple II	350
Atari 800	325
Atari 400	275
TRS-80 Color Computer	225
TI 99/4A	200
Vic 20	155
Timex 1000	100

Mike Katz, Epyx.

There are significant differences in manufacturing computer software as opposed to game system software. Some key differences:

- The small guys can still make computer software hits. Many different companies are listed on the top 50 charts; many companies that make the list have never been heard of before.
- A hit is considered to sell around 75,000 units per year. This is low compared to (say) Donkey Kong, which did five million units. It's a different ballgame.
- Computer software must be developed for many different formats. This takes time and money. Game software is easier; it can be produced for one or only a few systems.
- For computer software, print is the key to advertising. It is not necessary to go mass market (such as TV), which would be a total waste of money.
- Industry positioning is different. In video game software, companies like Coleco and Parker specialize in licensing; others such as Activision and Imagic create original games. There's no such identity in the computer software field.

two-step (distributors and retailers). Game software is more direct, going through mass merchandisers and department stores.

There are similarities also:

- Hot arcade titles such as *Zaxxon* and *Frogger* sell well whether in the form of computer software or video system games.
- The public relations to launch new games is similar. Magazines in the field are beginning to have separate sections—one to review video system games; another to review home computer games.

Pat Ketchum, Datasoft.

I believe that the dedicated video machine will become a dinosaur, because of the price drop of home computers and the increasing versatility of home computers.

The smaller systems will be used for

I have the slippers.
Could you get the paper?

The perfect addition to any family, the RB5X Intelligent Robot™ is a versatile, multi-purpose, programmable home appliance.

RB5X comes completely assembled, with software that allows it to learn its environment; sonar and tactile sensors that detect obstacles in the robot's path; a routine that helps RB5X find its charger when its batteries are low; and an array of options that turns RB5X into a real workhorse.

With the vacuum attachment, you can program RB5X to vacuum the living room each morning after you leave. Add an arm, and RB5X becomes a messenger, able to lift and carry up to 12 ounces. Add the fire detector/extinguisher, and RB5X senses small fires, finds them, and puts them out. RB5X with voice capability can respond to your spoken word with actions or words of its own.

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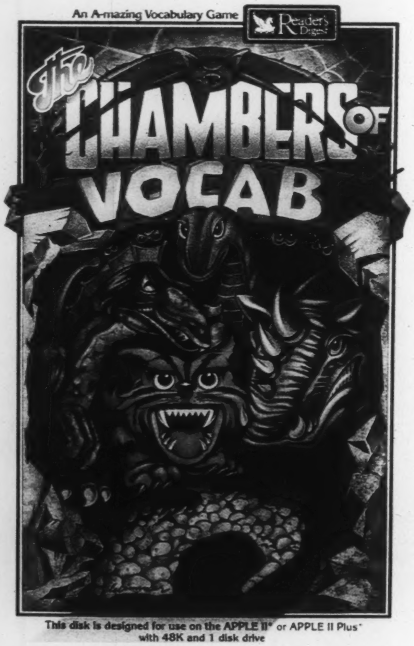
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CIRCLE 218 ON READER SERVICE CARD

entertainment and education, the larger ones, for personal finance and word processing.

A couple of 16-bit machines are now out, but they are really no better then the 8-bit machines. Eventually good 16-bit machines will come out and be affordable for the home market.

Jim Sanders, Texas Instruments.

I see a lot of convergence between game systems and home computers. A major driving force in the home computer market is the power of their multi-functionality (games, education, programming, etc.). The key behind the success of the T1 99/4A is its appeal to a wide variety of users—to different user-members of the family. People buy home computers for a variety of uses.

TI is eager to work with software authors. There has been much misunderstanding in the computer community over this point. TI is first a manufacturer of hardware and software. We urge software houses to work *through* TI. Our goal is to bring the price of TI computers down. To do this, we need to get a share of TI software and TI peripherals sales. This is why we have taken action to ensure that this will occur. TI will be able to have a symbiotic relationship with software authors.

(Note: Dave Gordon of Datamost earlier remarked that as long as TI takes this stance, his company will refuse to make TI software).

The advantages of the software people to working through TI are:

- If TI publishes, the software can be pre-reviewed by users at the retail outlets. This is a strong reason to have TI hardware and software bundled in the same distribution channels.
- You can make use of the 15,000 TI distribution outlets.

TI is eager to work with software authors.

Some major driving forces in the industry:

- Technology. The user will buy a low-end computer and expand his system as the technology develops.
- The purchaser of home computers wants to be a part of what's happening in the future.
- The new product introductions, which will radically change the industry.

Al Kahn, Coleco.

The only thing driving home computers into the market is price. To be frank, the home computers are finally selling for what they're worth.

The critical question is not the home computer versus the game console. It is what the consumers want. ColecoVision in fact is a sophisticated 8-bit microprocessor adaptable to many computer functions.

There's no question about it. The "hot button" to get ColecoVision into homes is games. People want games.

No cheap home computer can both be a games machine and do other functions. The user needs disk drives, printers, and so on, bringing the total cost to $700 or so.

Coleco believes in instant gratification. That's why *Donkey Kong* is supplied with ColecoVision.

The machine must also assuage parents' guilt. To wit, "If my kids don't become computer literate, they may have to become doctors!"

YX
TER SOFTWARE
ATARI
PARKER BROTHERS
VIDEO GAME CARTRIDGES
DATA SCAN
UMENTS

Tom Restaino, Activision.

A key irony of this conference is the lack of focus on the consumer. I feel Al Kahn has shown the first real recognition of the importance of the consumer at the conference.

Activision sells "emotion," which happens to come in the form of a cartridge and plays on the VCS.

The evolution of our market was entirely predictable. Activision was founded as a home computer/VCS software company. We happened to start with games for video systems, which after all are actually computers.

I estimate there are 15 million units of video game hardware in the home. The better game hardware, such as ColecoVision and Intellivision III, will keep the market moving.

The amount of advertising in this area has been extraordinary. In 1983, the quantity of the ads has doubled. I also feel the quality of the ads has doubled.

The future will see dramatically improved games. Home computer games are still in their infancy. Activision sees this as an area of very strong growth in the future. Home computer unit volumes are on an entirely different level from video games, as Mike Katz pointed out. In fact, joy to many is to sell 50,000 units.

The distinctions between the game systems and the home computers will blur.

Activision's criteria in deciding what hardware to manufacture for:

- The capability of the hardware to play games well.
- The amount of manufacturer support and long term commitment of the manufacturer to that hardware.
- The potential for a large installed base. Numbers also help.

I expect lots of dual game system-computer ownership. I don't feel one machine can do all. The distinctions between the game systems and the home computers will blur. But the important thing is that, collectively, they will grow.

Fred Cutler, Mattel.

A slide presentation explaining the rationale behind the development of Mattel's Aquarius system:

- Aquarius is bridging the software gap between dedicated game machines and home computers. Video game machines are friendly and inviting. Home computers are not.
- Video system software is driven by sensual stimulation. Home computer software is driven by intellectual stimulation.
- Home computer buyers wish to step beyond video games.
- There will be four important home computer software categories: games/entertainment, home education, home productivity, and self improvement.

The emerging video game/education marriage is being led by Spinnaker, The Learning Company, CTW (Children's Television Workshop), Disney, and Mattel. Mattel has an Aquarius Logo.

Session: "The Cartridge Kings"

Bill Grubb, Imagic.

If Jim Levy is the granddaddy of the industry, Nolan Bushnell is the founder. We sometimes consider ourselves one of the bastard sons.

The industry is driven by two main forces:

- Creative talent
- Taking a high quality entertainment product and marketing the hell out of it.

There are three words to describe the industry:

- Explosive: By the end of 1983, there will be 25 million appliances in the U.S. on which games can be played.
- Confusing: A vast number of people want a piece of the action. There is some oversupply, and the distribution channels are changing.
- Melding: Three years ago, the video game system was one business; personal computers were different. Now, home computers, the offspring of personal computers, are growing far faster than their parents. The consumer is the real king.

John O'Leary, Parker Brothers.

The key thing is to be smart about games. We at Parker Brothers think we certainly are that. Parker is a company that makes games in a variety of formats. I see a huge market glut, with oversupply at the retail and manufacturer level, putting pressures on margins (price cutting).

Retailers are buying in smaller quantities and looking for guaranteed hits. The industry is highly competitive; it's hardball out there.

The key is arcade game licensing, *plus* strong game play, *plus* strong promotional support. Other licensing is effective, too, such as that of *Star Wars.* Parker is looking at software for eight systems, including four home computers.

Al Pepper, Fox Video Games.

I see both senile geriatrics (industry maturity, some home computers sitting in a closet) and a crying baby (industry immaturity; home computers selling in droves).

Panel Discussion:

Grubb: A video game mega-hit is over one million units; a major hit is 500,000 to 600,000 copies. If fewer than 100,000 units are sold, with decent promotion, most companies will find it a losing proposition.

The life expectancy of games is changing rapidly.

The life expectancy of games is changing rapidly. Two years ago, it was two years. Today, it's from six months to as little as six weeks.

O'Leary: Some games such as *Frogger* are still lasting as long as a year.

Grubb: Manufacturers are being wary in 1983 with new product. The cost to develop product will stay even or even increase due to additional memory of the hardware. Promotional costs are increasing. The cost of producing a cartridge is now $5 to $6; the cost to make a record is $.50. Thus the industry has big problems with returns.

There are about 300 to 325 Atari VCS titles now. In the last five days, I have heard of five new companies entering the VCS software industry.

Question: "Will there be an industry shake-out?"

Grubb: The shake-out will continue.

Pepper: There are very few industries around with many aggressive competitors. The shake-out is inevitable.

Concluding Remarks

Lee Zhito, Billboard Magazine.

Lee Zhito asked four questions, all of which were greeted with enthusiastic positive responses:

- Did you learn anything from the conference?
- Should we have another one next year?
- Should it be in San Francisco?
- Should we change hotels?

My Reactions

I could go on for pages and pages with conclusions and predictions. But to spare you—and me—I'll boil it down to four comments.

- Of all the speakers, note how the ones that *really* stressed the consumer were Al Kahn of Coleco and Tom Restaino of Activision. Then note who are the industry growth leaders in hardware and software, respectively.
- Home computers, in many areas, are still a solution in search of a problem. It is still basically games, games, games. How can they seriously expect us to process words on the low-end computers? The educational stuff will find a niche soon enough. But home finance and the filing of recipes and cataloguing of our stamp collections has a long way to go.
- Things will change so fast (the technology, the shake-out, and the unforeseen), that most of the speeches at next year's conference will be based on developments of which no one at this year's conference is fully aware.
- You, the consumer, will continue to benefit, with unbelievably fine new product, at unbelievable low prices. ☐

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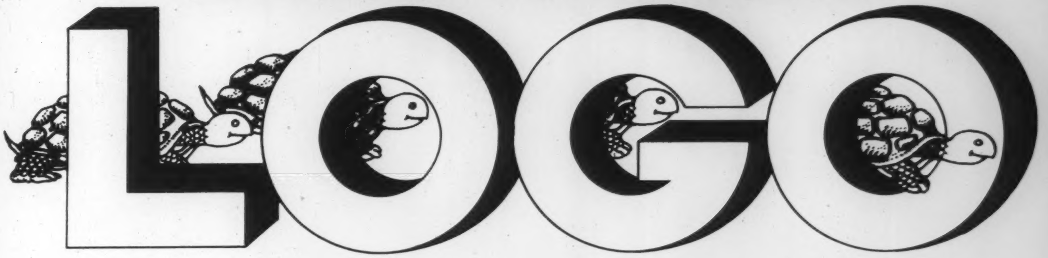

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A challenge for all readers. Adapt this program to your computer. Win $25.

Legible Listings With the TRS-80 Model 100

David H. Ahl

If you read our review last issue of the TRS-80 Model 100 and the essentially similar NEC PC-8201, you know we were enthusiastic about both computers. However, one area in which they fell down was in their ability to produce formatted output.

As a small step in overcoming this, Radio Shack included a "Fancy Program Listing" program on page 204 of the Model 100 manual. Unfortunately, the program doesn't work. Not only are several lines of code missing, but some of the logic is just plain wrong.

Listing 1 is a corrected and improved version of the Radio Shack program. It is instructive to examine just how it works.

Lines 120 to 140 do some housekeeping and set initial values to the page counter (PG=0) and lines per page (Z=65). Depending upon the printer you use, Z might have to be set to either 65 or 66.

Line 150 simply displays all the files currently in the computer. However, only document files (suffix .DO) may be listed with this program. There are several ways to convert a basic program into a document file for printing. The easiest is to select the program from the menu, break into Basic, and hit Function Key 3. The screen will then display:

```
Save "
```

Type whatever you want the program to be named, followed by a close quote, comma, and A. For example,

```
Save "Lines", A
```

This saves the program in ASCII format as Lines.DO, i.e., as a document file.

Lines 160 and 170 request the name of the file and whether you want a continuous listing or a paginated one. The document (.DO) file that you specify is opened for input in Line 180.

Lines 190 and 200 print a page header (program name, date, and page number), skip a line, and increment the line counter by two.

A single character (IN$) is read from the file in Line 210. If the character is an end of file marker (EOF(1) is true) then the program branches to Line 290 where the last character (the end of file marker) is deleted from the end of the print string (PR$) before this string is printed out in Line 300.

If the character read in Line 210 is not an end of file marker, it is added to the print string in Line 220.

The next few lines test if the last character read was a carriage return. If so, the last two characters are deleted from the print string. Pressing the ENTER key in Basic actually produces two characters, a linefeed and a carriage return; both must be deleted from the print string since the LPRINT command (Line 250) automatically sends a linefeed/carriage return to the printer and we don't want the printer getting this pair of instructions twice.

If the last character was a colon (:) or statement separator, the line to that point is printed, and four spaces are added to the beginning of the new print string (Line 260). Hence, when the next statement is printed, it will be indented four spaces, and, assuming three-digit line numbers, will line up with the numbered statements.

If the listing is to be continuous, Line 270 skips the routine that tests for the end of a page (56 or more lines printed). If the output is to be in pages, Line 310 skips the 9 or 10 lines to the top of the next page, and branches back up to the page header routine.

On the other hand, if the end of file indicator has been set (X=1) in Line 210, the program ends.

While this program produces nice looking listings of most programs (see Listings 2a and 2b), it creates a mess if a colon is used for anything other than separating statements on a single line. For example, if you set time or date in a program (not likely) or use a colon in a print string (more likely), the listing will skip to a new line and insert four spaces.

A Challenge to Readers

This general procedure will work for computers other than the TRS-80 Model 100 and NEC 8201. For cassette-based systems, the procedure will probably have to be a subroutine with high line numbers that coexists with the program to be listed. To combine the two pro-

```
100 ' Program to produce "fancy" listings
110 ' by David Ahl, Creative Computing
120 CLS:MAXFILES=1
130 CLEAR 2000
140 PG=0:Z=65
150 FILES
160 INPUT "Program Name (must be .DO file)";N$
170 INPUT "List continuous (c) or in pages (p)";C$
180 OPEN N$ FOR INPUT AS 1
190 PG=PG+1:LPRINT "Program ";N$;TAB(16);DATE$;TAB(34);"Page";PG
200 LPRINT:LC=2
210 IN$=INPUT$(1,1):IF EOF(1) THEN X=1:GOTO 290
220 PR$=PR$+IN$
230 IF IN$<>":" AND IN$<>CHR$(10) THEN 210
240 IF IN$=CHR$(10) THEN PR$=LEFT$(PR$,LEN(PR$)-2)
250 LPRINT PR$:LC=LC+1
260 IF IN$=":" THEN PR$="    " ELSE PR$=""
270 IF C$="c" OR C$="C" THEN 210
280 IF LC=>56 THEN 310 ELSE 210
290 PR$=LEFT$(PR$,LEN(PR$)-1)
300 LPRINT PR$:LC=LC+1
310 FOR J=LC TO Z:LPRINT:NEXT J
320 IF X=1 THEN 330 ELSE 190
330 END
```

Listing 1. Program to produce formatted program listings on the Radio Shack Model 100 and NEC PC-8201 computers.

grams without having to retype the lister each time will require a merge procedure.

For disk systems, the approach is somewhat easier. However, since it is undesirable to read a single character at a time from the disk (much too slow), a line or the entire file would have to be brought into a buffer at one time, and the listing routine applied to that.

We would like to see such a program for every small computer and will pay $25 to the first submission for each different machine. Submissions should include the program, one or two sample runs, and a short explanation of how it works and description of how to use it (typed, double space). Listings should be made with a dark ribbon that can be reproduced in the magazine. ☐

"Well... I guess that program wasn't compatible with my computer!"

```
100 ' Draws lines on Model 100 screen.
110 ' Program by David Ahl, May 1983.
120 CLS:SCREEN 0,0
130 X1=110:Y1=30
140 X2=239*RND(1)
150 IF X1>X2 THEN A=-1 ELSE A=1
160 FOR X=X1 TO X2 STEP A
170 PSET(X,Y1):NEXT X
180 X1=X2:Y2=63*RND(1)
190 IF Y1>Y2 THEN A=-1 ELSE A=1
200 FOR Y=Y1 TO Y2 STEP A
210 PSET (X1,Y):NEXT Y
220 Y1=Y2:GOTO 140
```

Listing 2a. Listing of a program produced using the LLIST command.

```
Program lines   83/05/21          Page 1

100 ' Draws lines on Model 100 screen.
110 ' Program by David Ahl, May 1983.
120 CLS:
    SCREEN 0,0
130 X1=110:
    Y1=30
140 X2=239*RND(1)
150 IF X1>X2 THEN A=-1 ELSE A=1
160 FOR X=X1 TO X2 STEP A
170 PSET(X,Y1):
    NEXT X
180 X1=X2:
    Y2=63*RND(1)
190 IF Y1>Y2 THEN A=-1 ELSE A=1
200 FOR Y=Y1 TO Y2 STEP A
210 PSET (X1,Y):
    NEXT Y
220 Y1=Y2:
    GOTO 140
```

Listing 2b. Listing of the program in 2a using the Formatted Program Lister program.

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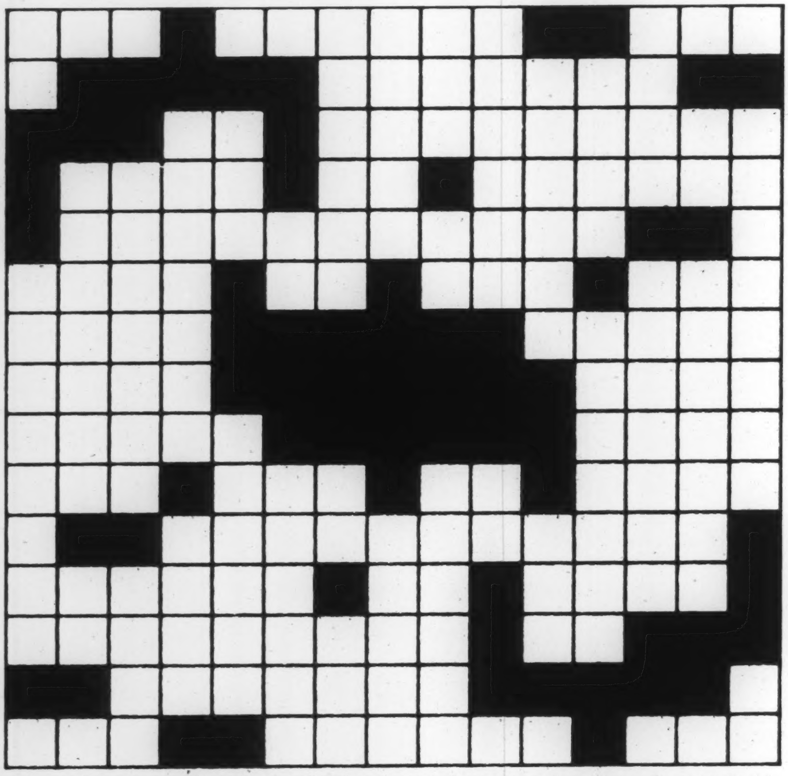
CIRCLE 216 ON READER SERVICE CARD

Crossword Puzzle Pattern Generator

Robert E. Kennedy
and
Curtis N. Cooper



Above is an example of a randomly generated crossword pattern. Its output is composed of dashes and asterisks. To have a more workable copy, we usually shade in the black squares and draw solid lines through the dashes.

Many people enjoy working the crossword puzzle in the daily newspaper. It is also fun and a good challenge to develop this type of word puzzle yourself. The actual construction of the puzzle pattern, however, can be very tedious and time-consuming.

The following program will speed up this part of the puzzle-making process. This will free your time for what we consider the most enjoyable and creative part of crossword puzzle development: you can spend your time searching for appropriate and interesting words and their definitions to use in a particular crossword puzzle pattern.

Here, we emphasize the construction of a 15 by 15 square crossword puzzle with the restriction that no less than 25% of the puzzle be composed of black squares. It should also be mentioned that the usual symmetry of crossword puzzle patterns is about the middle square. This means that the puzzle looks the same upside-down as rightside-up.

This program gives you two possible options. If you wish to construct a particular crossword puzzle pattern, you can do so. If, on the other hand, you wish to let the computer generate a pattern for you, this option is available.

Even though a puzzle pattern is randomly generated (at least with respect to the random number generator of a particular computer), some restrictions must be imposed to obtain a "good" crossword puzzle pattern. For example, we feel that such a pattern should have at least two black squares in each row and each column. In addition, an effort should be made to keep a group of white squares from being surrounded by black squares. However, in the final analysis, you are the judge of the utility of the crossword puzzle pattern that your computer generates. You might decide that a particular output could be improved by darkening some additional squares or by changing some black squares to white. Regardless of how you modify the puzzle pattern, we think that your enjoyment and understanding of crossword puzzle construction will be increased. The following program notes should help you understand the program and modify it for your particular needs.

Program Notes

This program is written in North Star Basic and is offered in "menu form" with six subroutines which give some structure to the program.

Backwards slashes (line 1120) indicate the end of a statement and give the option of a line with multiple statements.

The device number for the printer in this particular setup is (line 1800). Your system setup may be different.

The North Star dialect of Basic has an EXIT statement. Here, it is used to exit from a FOR-NEXT loop before the loop is completed (lines 1440 and 1490).

The array A is used to store the 15 by 15 crossword puzzle pattern. Since two-dimensional arrays are not available in this Basic, the entry in the Ith row and the Jth column is determined by the formula: A(15*(I - 1) + J). See, for example, line 1320.

Robert E. Kennedy and Curtis N. Cooper, Dept. of Mathematical Sciences, Central Missouri State University, Warrensburg, MO 64093.

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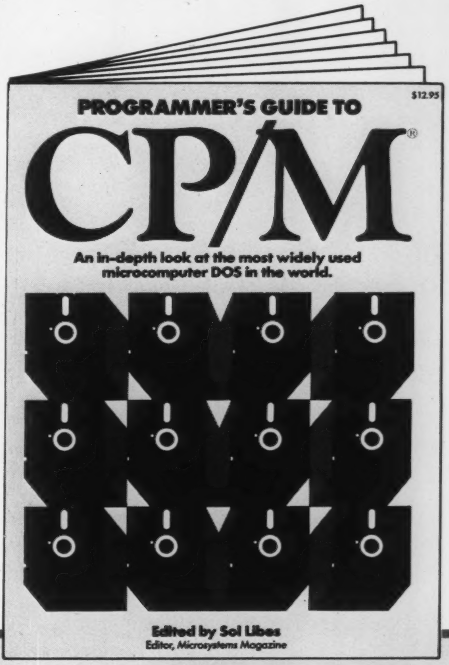
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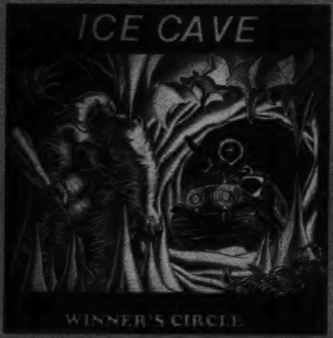
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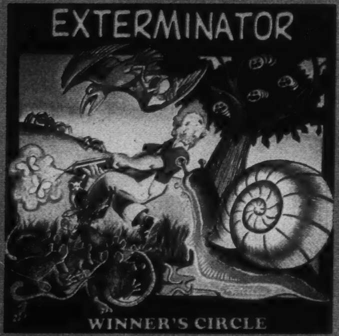
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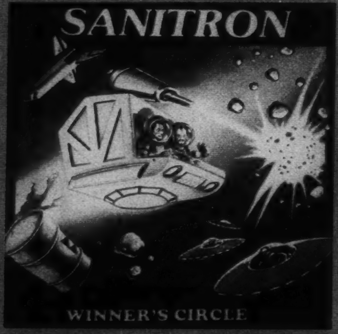
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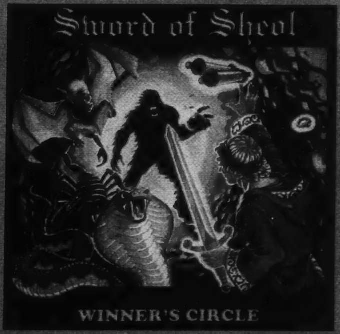
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Crossword Puzzle, continued...

The range of from 27 to 32 black squares determined by Subroutine I affords a range of from 54 to 64 black squares in the total crossword puzzle pattern. This range can be adjusted by modifying line 1210.

An "enhancement" is implemented by Subroutine IV in an effort to avoid having a group of white squares completely surrounded by black squares or borders. If this should occur, you will probably wish to darken any such white squares. Thus, every white square should be accessible to every other white square by horizontal and vertical paths.

In Subroutine III, the number of black squares in a pattern before enhancement has a range of 2 to 5 in each row and each column. This is just a personal preference which can be changed by modifying lines 1440 and 1490. ☐

Listing.

```
1000 REM ******************* PROGRAM *********************************
1010 REM   TO OUTPUT A  15X15  CROSSWORD PUZZLE PATTERN .
1020 REM *************************************************************
1030 REM
1040 REM
1050 DIM A(225),S$(76),T$(76)
1060 PRINT "REMINDER:     TURN ON YOUR PRINTER !"
1070 PRINT
1080 PRINT "IF YOU WANT TO CONSTRUCT YOUR OWN CROSSWORD PUZZLE"
1090 PRINT "PATTERN, TYPE Y , ELSE TYPE N ."
1100 INPUT R$
1110 IF R$ = "N" THEN 1130
1120 GOSUB 1980 \ GOSUB 1780 \ END
1130 GOSUB 1200\COSUB 1300\GOSUB 1410\GOSUB 1580\GOSUB 1780\END
1140 REM
1150 REM ******************* SUBROUTINE I ******************************
1160 REM TO RANDOMLY DETERMINE ( WITH A RANGE FROM 27 TO 32 ) THE
1170 REM NUMBER OF BLACK SQUARES IN THE CROSSWORD PUZZLE PATTERN .
1180 REM *************************************************************
1190 REM
1200 PRINT "I AM WORKING ......."
1210 N=INT(RND(-1)*6)+27
1220 FOR I=1 TO 225 \ A(I) = 0 \ NEXT I
1230 RETURN
1240 REM
1250 REM ******************* SUBROUTINE II ***************************
1260 REM   TO RANDOMLY POSITION THE BLACK SQUARES OF THE CROSSWORD
1270 REM                     PUZZLE  PATTERN .
1280 REM *************************************************************
1290 REM
1300 FOR X=1 TO N
1310    J=INT(RND(-1)*15+1) \ I = INT(RND(-1)*15+1)
1320    A(15*(I-1)+J)=1 \ A(15*(15-I)+16-J)=1
1330 NEXT X
1340 RETURN
1350 REM
1360 REM ******************* SUBROUTINE III *************************
1370 REM TO COUNT AND CHECK THE NUMBER OF BLACK SQUARES IN EACH ROW
1380 REM                   AND IN EACH COLUMN .
1390 REM *************************************************************
1400 REM
1410 FOR J=1 TO 15
1420    Z = 0
1430    FOR I=1 TO 15 \ Z = Z+A(15*(J-1)+I) \ NEXT I
1440    IF Z<2 OR Z>5 THEN EXIT 1130
1450 NEXT J
1460 FOR J=1 TO 15
1470    Z = 0
1480    FOR I=1 TO 15 \ Z = Z+A(15*(I-1)+J) \ NEXT I
1490    IF Z<2 OR Z>5 THEN EXIT 1130
1500 NEXT J
1510 RETURN
1520 REM
1530 REM ******************* SUBROUTINE IV **************************
1540 REM TO ENHANCE (WITH RESPECT TO DISTRIBUTION OF BLACK SQUARES)
1550 REM             THE CROSSWORD PUZZLE PATTERN .
1560 REM ************************************************************
1570 REM
1580 PRINT " A PUZZLE PATTERN HAS BEEN GENERATED. IT WILL BE PRINTED "
1590 PRINT " ON YOUR PRINTER AFTER IT HAS BEEN ENHANCED ."
1600 FOR I=1 TO 15
1610    FOR J=2 TO 14
1620       IF A(15*(I-1)+J-1)<>1  OR A(15*(I-1)+J+1)<>1 THEN 1640
1630       A(15*(I-1)+J)=1
1640    NEXT J
1650 NEXT I
1660 FOR J=1 TO 15
1670    FOR I=2 TO 14
```

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Crossword Puzzle, continued...

```
1680       IF A(15*(I-2)+J)<>1 OR A(15*I+J)<>1 THEN 1700
1690       A(15*(I-1)+J)=1
1700    NEXT I
1710 NEXT J
1720 RETURN
1730 REM
1740 REM ****************** SUBROUTINE V *************************
1750 REM          TO PRINT THE CROSSWORD PUZZLE PATTERN
1760 REM ****************************************************
1770 REM
1780 T$="----------------------------------------------------"
1790 T$=T$+T$
1800 PRINT #2 T$
1810 FOR J=15 TO 1 STEP -1
1820    S$="!"
1830    FOR I=1 TO 15
1840       IF A(15*(I-1)+J)=0 THEN 1870
1850       S$=S$+"****!"
1860       GOTO 1880
1870       S$=S$+"    !"
1880    NEXT I
1890    PRINT #2 S$ \ PRINT #2 S$ \ PRINT #2 T$
1900 NEXT J
1920 RETURN
1930 REM
1940 REM ****************** SUBROUTINE VI ************************
1950 REM          TO GENERATE A PARTICULAR CROSSWORD PATTERN
1960 REM ********************************************************
1970 REM
1980 PRINT "         TYPE IN THE ROW NUMBER AND THEN THE COLUMN"
1990 PRINT "      NUMBER OF THE SQUARE YOU WISH TO BE BLACK. THE"
2000 PRINT "      ROW NUMBER NEED ONLY BE BETWEEN  1  AND  8  AND"
2010 PRINT "      THE COLUMN NUMBER NEED ONLY BE BETWEEN  1  AND "
2020 PRINT "      15  SINCE THE PUZZLE PATTERN IS TO BE SYMMETRIC"
2030 PRINT "      ABOUT THE MIDDLE SQUARE ( ROW 8, COLUMN 8 ) ."
2040 PRINT "      WHEN YOU ARE FINISHED, INPUT  0, 0 ."
2050 INPUT "      ENTER ROW, COLUMN ", J,I
2060 IF I=0 AND J=0 THEN RETURN
2070 A(15*(I-1)+J)=1 \ A(15*(15-I)+16-J)=1
2080 GOTO 2050
```

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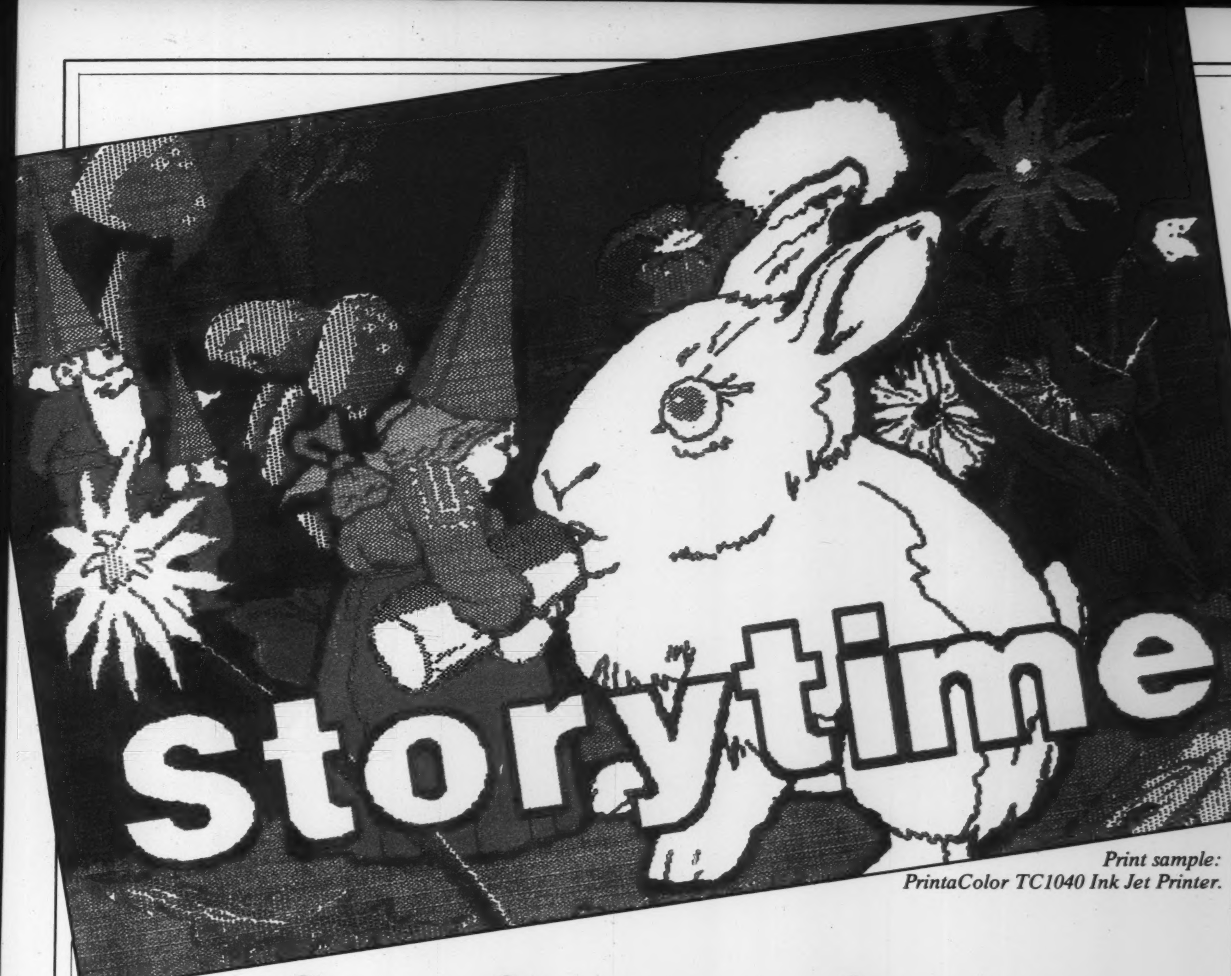

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...print about printers...

Betsy Staples

As we prowled the giant exhibit halls and sweltering tents that housed the National Computer Conference this year, we discovered 13 manufacturers who were showing printers of interest to personal computer users.

Anadex

At the top of our alphabetical list is our old friend Anadex with the DP-9725A four-color printer selling for $2395. Color printing is made possible by a four-color ribbon with red, yellow, blue, and black bands. Operating in double-pass mode, the printer offers multiple color combinations, as a different color can be selected for each pass. Colors can be changed at any point in a printed line, and resolution of either 144 or 72 dots per inch (in both horizontal and vertical directions) can be chosen.

The machine also offers four print quality modes, including near letter quality (50 characters per second at 10 characters per inch or 60 cps at 12 cpi with proportional spacing), correspondence quality (100-150 cps), data processing quality (200 cps), and condensed (150 cps at 15 cpi and 164 cps at 16.4 cpi). Character sets provided with the printer are Swedish, Danish-Norwegian, German, French, Spanish, Italian, and standard USASCII.

Other features include left, right, and full justification; title centering; positive half-line feed; in-line font changes; and RAM expandable to 12.5K in 4K increments. Options include OCR, superscript, subscript, scientific fonts; bar codes; and font downloading from the host computer. No mention is made of a noise-level rating.

Canon

The Canon A-1210 color printer features seven-color drop-on-demand technology. Resolution is 640 dots per line, and maximum speed is listed at 40 cps.

The Canon printer offers the full ASCII character set in standard and enlarged modes (40 and 80 characters per line, respectively). It is compact, measuring 15 3/4" × 11 5/8" × 4 1/4", and has a Centronics parallel interface. Ink is supplied in cassettes which have an estimated life of 3.5 million characters.

Based on the specifications and a short demonstration, and despite the

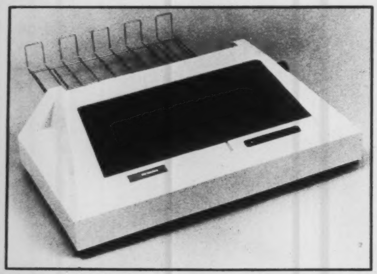
continued...

fact that the lowercase character set lacks descenders, the Canon looks like a good buy at $795. We'll let you know more after we get one in-house for evaluation.

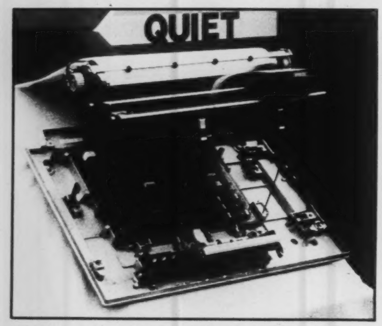
Sharp

A somewhat heftier color printer with a price tag to match is the Sharp IO-700 which will sell for "under $10,000." Again, ink jet technology allows the blending of four inks to create seven colors. The maximum number of dots per inch (120) can be changed to produce halftones. Speed is a tortoise-like 20 cps, but the quality of the finished product makes it worth waiting for.

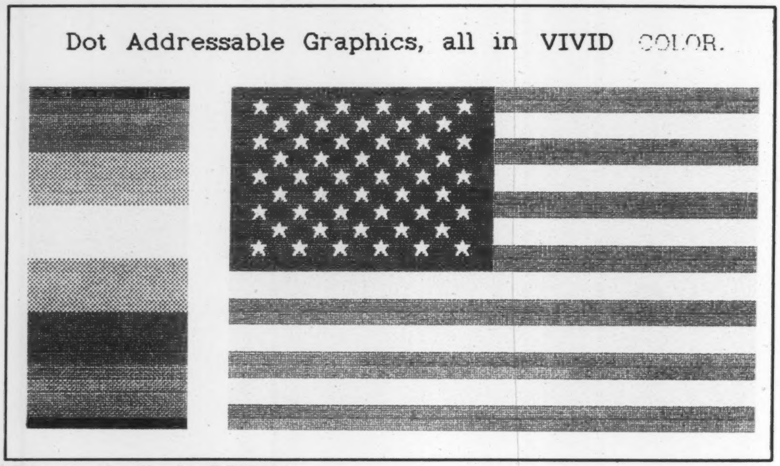
The Sharp uses a TTL parallel buffer



Anadex DP-9725A four-color printer.

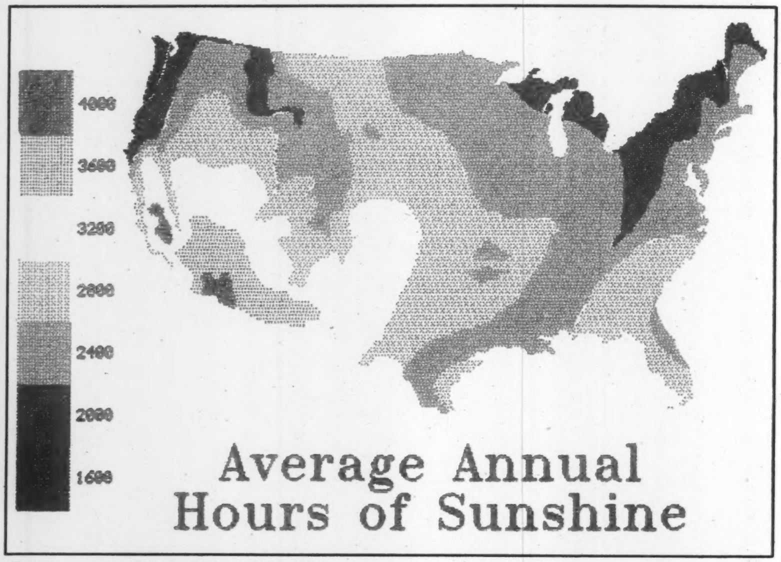


Under the hood of the PrintaColor TC1040.

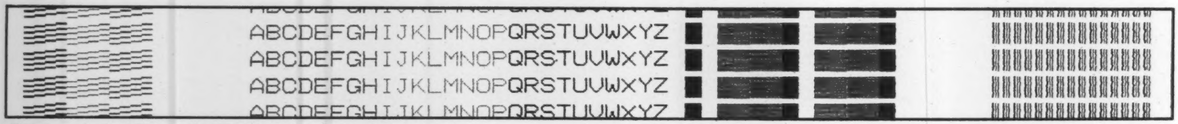


Dot Addressable Graphics, all in VIVID COLOR.

Print sample: Anadex DP9725A.

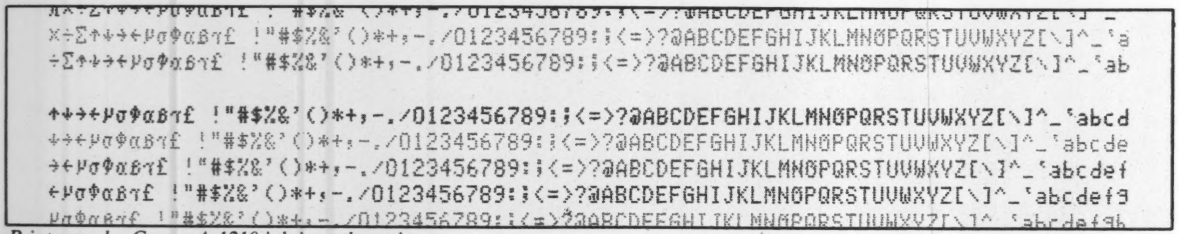


Print sample: PrintaColor TC1040.



ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ

Print sample: Sharp IO-700 ink jet color image printer.



```
×÷Σ↑↓→←μσΦαβγ£ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNØPQRSTUVWXYZ[\]^_`a
÷Σ↑↓→←μσΦαβγ£ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNØPQRSTUVWXYZ[\]^_`ab

↑↓→←μσΦαβγ£ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNØPQRSTUVWXYZ[\]^_`abcd
↓→←μσΦαβγ£ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNØPQRSTUVWXYZ[\]^_`abcde
→←μσΦαβγ£ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNØPQRSTUVWXYZ[\]^_`abcdef
←μσΦαβγ£ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNØPQRSTUVWXYZ[\]^_`abcdefg
```

Print sample: Canon A-1210 ink jet color printer.

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Printers, continued...

and offers a 4K data buffer along with an 8K ROM and 2K RAM. Only one version of the ASCII character set is available. The unit measures 19 11/16" × 13 1/4" × 5 15/16".

PrintaColor

The TC1040 color ink jet printer/plotter from PrintaColor Corporation offers an astounding 4913 different hues. It prints horizontally in either of two resolutions: 84 or 120 dots per inch; vertically, it prints at 85 dots per inch.

RS-232C serial and Centronics parallel interfaces are available. Foreground and background colors are selectable for each of the 96 available ASCII characters, and there are eight software-selectable character sizes. Character sets are available for English, Spanish, German, French, Swedish, and Dutch.

The TC1040 sells for a remarkably low $5495.

Mannesmann-Tally

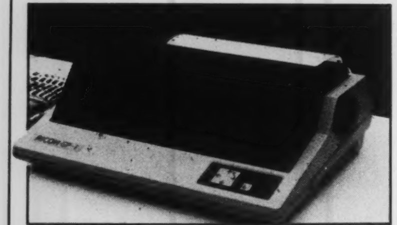
Plotters are, of course, the traditional means of producing color output, and there were several worthy of note at NCC. Perhaps most worthy of note—in terms of both price and likelihood of availability—is the Mannesmann-Tally Pixy 3, which sells for $845.

The flatbed plotter accommodates 8½" × 11" paper or Mylar on which it draws with fiber-tip pens. Plots are drawn quite quickly using up to three different colors.

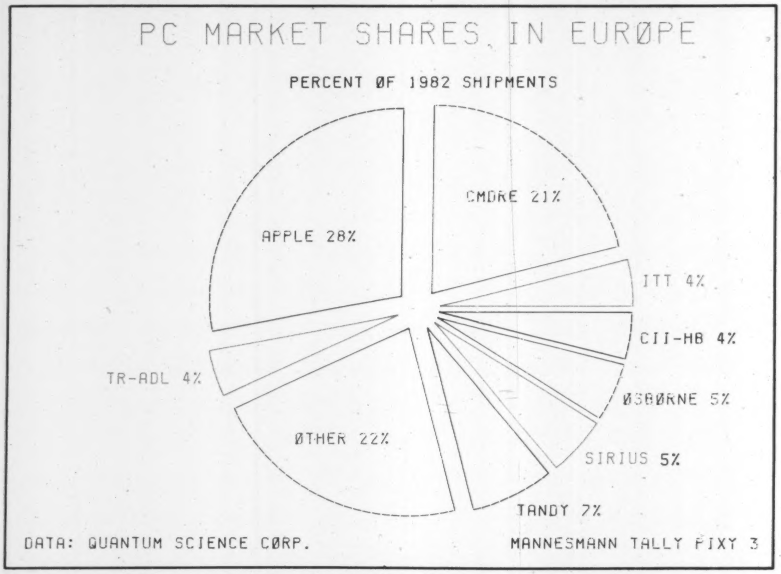
Features of this practical little plotter include nine international character sets, variable character size and rotation, RS-232 interface, curve fitting, and scientific and Greek characters. The unit is said to be compatible with most existing business graphing software. More on this one very soon.

Ricoh

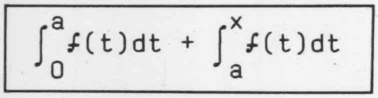
A Japanese company, Ricoh of America, Inc., was showing the GP-1, a four-color drum plotter. The GP-1 uses ballpoint or fiber-tip pens to print on either roll or cut paper; it can also make overhead projector transparencies. According to the manufacturer, "it can also be used as a character printer with 214 different character patterns."



Ricoh GP-1 four-color plotter.



Sample plot: Mannesmann Tally Pixy 3 Micro Plotter.



$$\int_0^a f(t)dt + \int_a^x f(t)dt$$

Print sample: Ricoh 1200N.

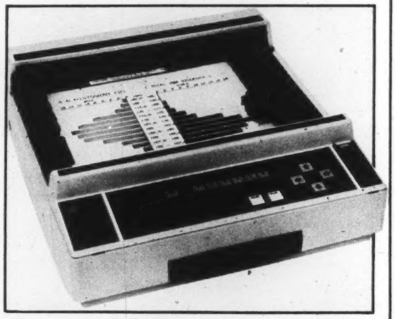
We were somewhat stunned when one of the Ricoh representatives staffing the booth told us the end-user price was "about one million dollars." Somehow it didn't seem to be worth quite that much. Further questioning revealed that the young Japanese man had misplaced his decimal point; the actual price will be about $1000.

Ricoh was also showing the 1200N daisy wheel printer. It will accommodate paper up to 13" wide and will print up to 165 characters per line at 20 characters per second.

The 1200N is available in RS-232C serial or Centronics parallel versions for under $1200. It is to be distributed in this country by Hamilton Microsystems.

Panasonic

Another flatbed plotter was announced by Panasonic. The VP-6801P offers six-color plotting with fiber, ballpoint, or plastic tip pens, and features a plotting area of 10" × 7.2". It is available with 8-bit parallel, GP-IB, or RS-232C interface, and is priced at $1995.

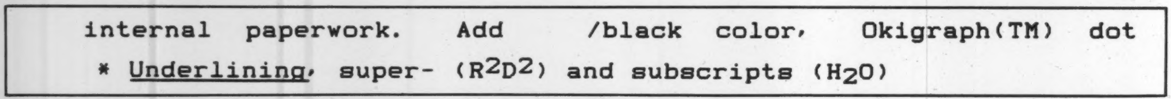


Panasonic VP-6801 high speed digital plotter.

A step up in the Panasonic line is the VP-6802P which offers eight-color plotting and a larger 14" × 10.2" plotting area along with many of the features of the VP-6801P. No price was listed for the VP-6802P.

Okidata

Okidata was showing its top-of-the-line Pacemark 2410, a dot matrix printer that combines superb print quality with two-color (red and black) capability.



internal paperwork. Add /black color, Okigraph(TM) dot

* Underlining, super- (R^2D^2) and subscripts (H_2O)

Print sample: Okidata Pacemark 2410 high speed multifunction printer.

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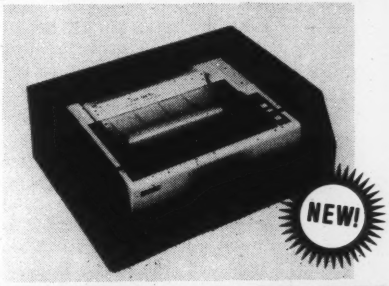

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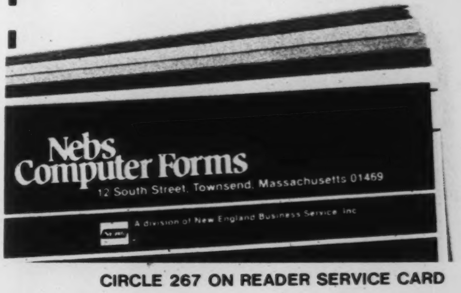
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Printers, continued...

Like its middle-of-the-line sister, the Pacemark 2350 which sells for $2695, the 2410 offers a 96-character ASCII character set; an alternate 96-character set and a 96-character downline loadable set; Okigraph dot addressable graphics; true descenders; super- and subscripts; and condensed and double width characters. Both printers offer Centronics parallel and RS-232C serial interfaces.

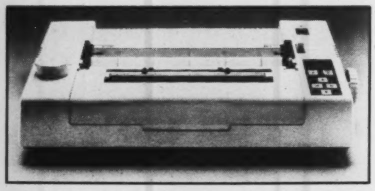
The 2410, which carries a suggested retail price of $2995, features three print modes: correspondence quality (85 cps), data processing (350 cps), and draft quality, which prints characters with extra dot density at 175 cps.

Leading Edge

In the Leading Edge booth, which was apparently intended to resemble a zoo, we found a hybrid printer/plotter. The CX 4800 plots on standard single or fan folded printer paper with four aqueous ballpoint pens which it changes automatically.

As a printer, the CX 4800 prints an 80-character line at 8 cps. A total of 167 characters, including upper- and lowercase letters, numbers, punctuation marks, graphic symbols, and foreign alphabets, is available. Printing and plotting can be mixed on the same page.

For simplicity, the CX 4800 has six user controls plus a self-test: four directional controls, pen switching, and linefeed. It also responds to 28 software commands from the user's computer. The printer/plotter sells for $695.



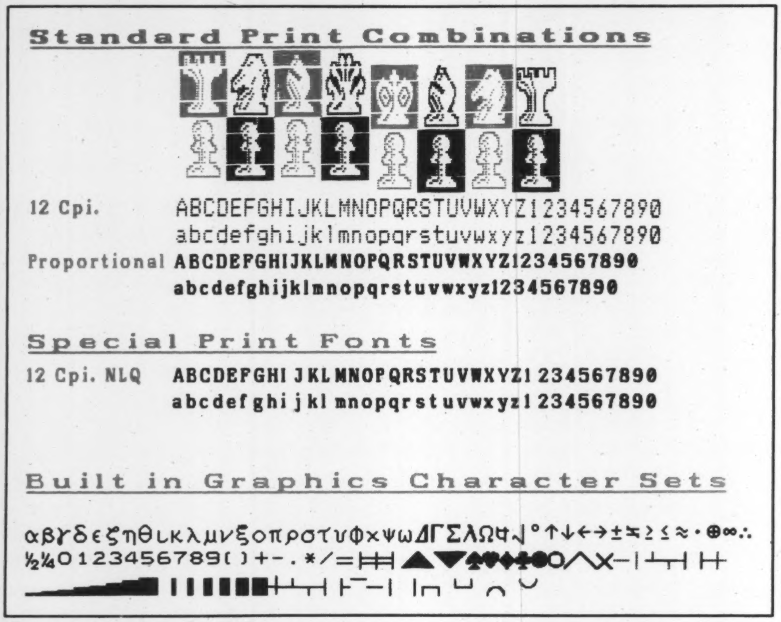
CX4800 printer plotter from Leading Edge.

Also featured in the Leading Edge booth was the two-color C. Itoh 8600B which offers "near letter quality" at 60 cps, "high-resolution" at 90 cps, and high speed draft printing at 180 cps. All three modes offer true descenders and underlining capability in black and red.

Available spacing includes 10 cpi, 12 cpi, 17 cpi, and proportional spacing.

The serial model, the 8600BR includes a 4K buffer and sells for $1295. The Centronics parallel model 8600BP includes a 2K buffer and bit image graphics capabilities and sells for $1395.

For considerably less money, Leading Edge offers the printer that wins our award for Most Inappropriate Name: the Gorilla Banana. For $249.95, you



Standard Print Combinations

12 Cpi. ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890
abcdefghijklmnopqrstuvwxyz1234567890

Proportional ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890
abcdefghijklmnopqrstuvwxyz1234567890

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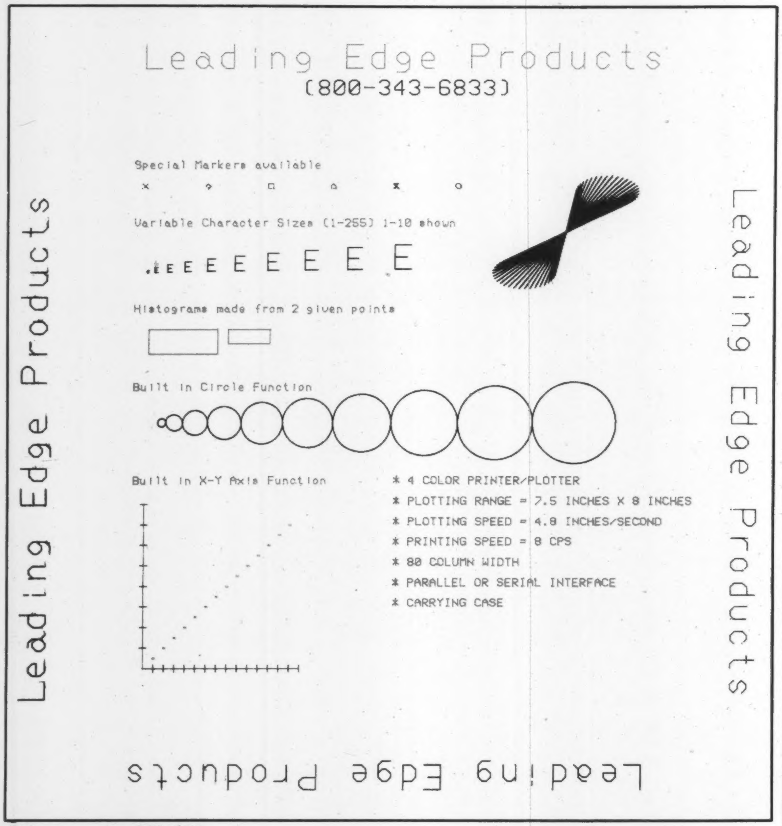
Print sample: C. Itoh 8600B.



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Print sample: CX4800.

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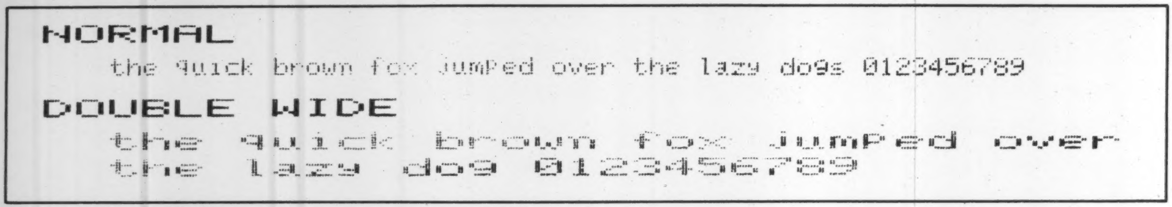
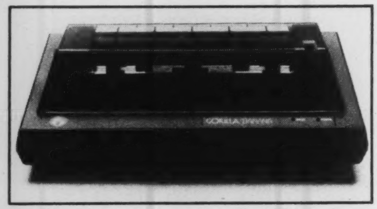
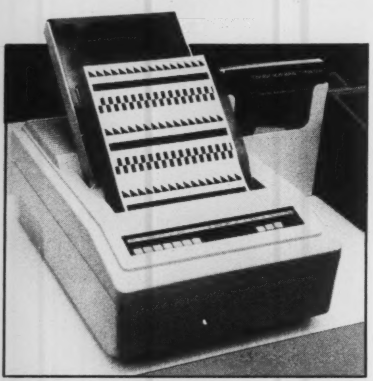


```
NORMAL
    the quick brown fox jumped over the lazy dogs 0123456789
DOUBLE WIDE
    the quick brown fox jumped over
    the lazy dog 0123456789
```

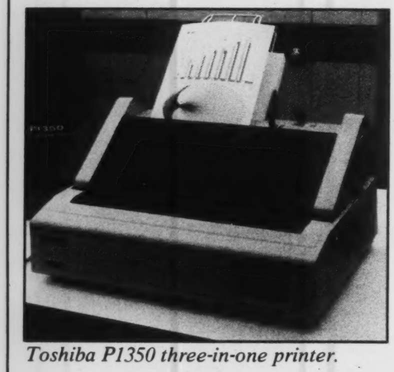
Print sample: Gorilla Banana.



Gorilla Banana from Leading Edge.

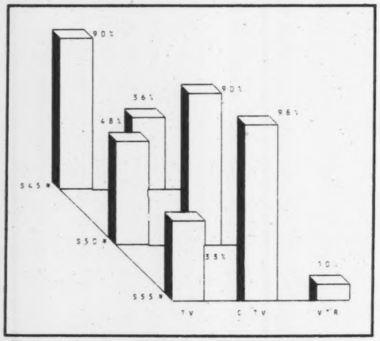


Toshiba TN-5000 thermal transfer line printer.



Toshiba P1350 three-in-one printer.

get a basic dot matrix printer which offers 80 columns, tractor feed, and a print speed of 50 cps. Normal character spacing is 10 cpi, but double width characters (five per inch) can be substituted under software control from the computer.



Print sample: Toshiba TN-5000.

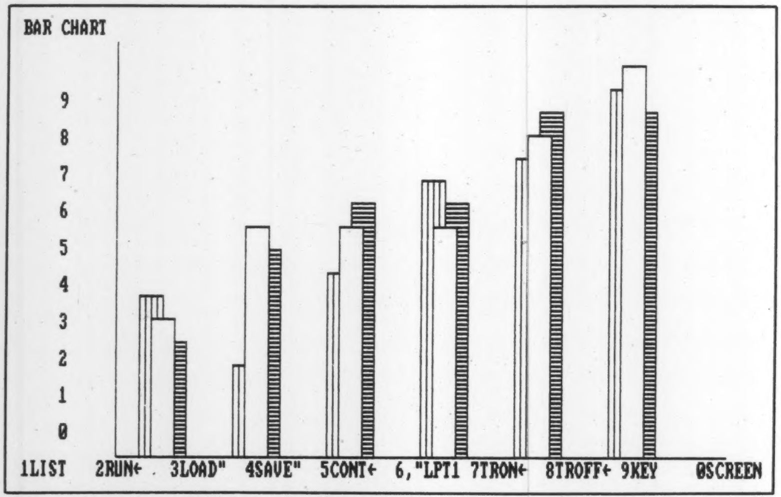
The Banana also features a dot addressable graphics mode with a density of 63 × 60 dots per inch and four character sets—U.S., U.K., Swedish, and German. The interface is Centronics parallel.

Toshiba

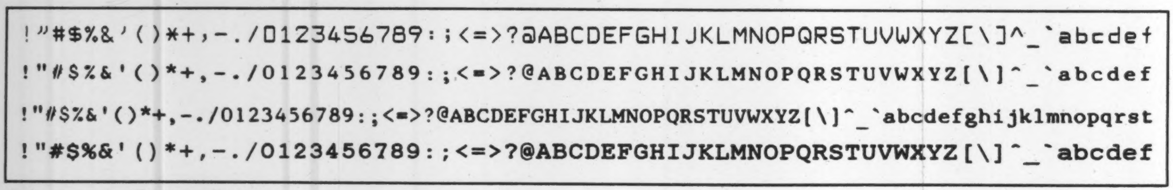
Another Japanese firm, Toshiba America, was demonstrating three impressive printers. The Toshiba P1350 is a dot matrix printer which produces letter quality print at 100 characters per second and high speed drafts at 192 cps. Dot addressable graphics are produced at a density of 180 × 180 dots per inch.

The 132-column printer produces originals and as many as three copies on single or continuous form paper from 5" to 15" wide. It is available with Centronics parallel or RS-232C serial interface and sells for $2195.

The Toshiba TN-5000 is a thermal line printer whose print speed is speci-



Screen dump from IBM PC to Toshiba P1350.



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!”#$%&’()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdef
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!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdef
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Print sample: Toshiba P1350.

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Printers, continued...

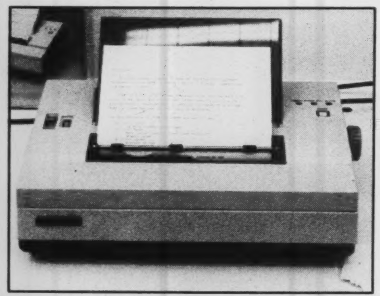
fied not in characters per second but in sheets per minute; it prints six sheets per minute. It uses plain paper that is fed to it by a cassette containing 250 sheets. Serial, parallel, and video interfaces are available for the printer, which sells for $1400.

The Toshiba TH-100H is a thermal transfer serial printer which offers near letter quality print and graphics capabilities. Print speed is 36 cps, and the character set offers 96 ASCII characters plus 32 international characters. The TH-100H sells for $440.

Data Impact Products

Also at the low end of the letter quality spectrum is the Data Impact Products DI-1000 daisywheel printer. With a print speed of 18 cps, the DI-1000 features 120, 144, or 180 columns on paper up to 13" wide. The Qume compatible printwheel offers 96 characters.

Additional features include bold printing, shadow printing, underscoring, and proportional spacing through software control from the host computer. The DI-1000 carries a retail price of $645.



Toshiba TN-100H thermal transfer printer.

Morrow Designs

Morrow Designs announced a line of letter quality daisywheel printers designed to run with all Morrow computer systems. The MP100 prints 100 columns at 14 characters per second. It is priced at $595.

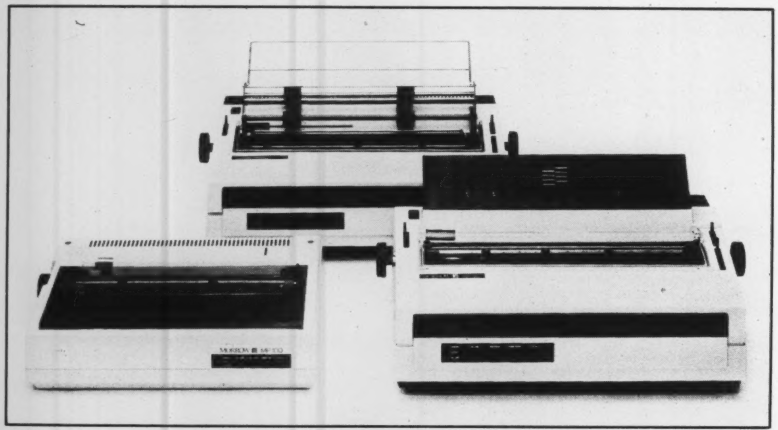
The MP200, which prints 132 columns at 20 cps, is priced at $945, and the MP300, which prints 132 columns at 31 cps, is priced at $1195. All three models offer bidirectional printing and support word processing functions such as boldface, underlining, centering and sub- and superscripts.

Qume

Qume was showing the Sprint 11 Plus daisywheel printer which offers 10, 12, and 15 pitch printing as well as proportional spacing on paper up to 15" wide. Print speed is either 40 or 55 cps using a standard 96-character daisywheel.

The unique feature of the Sprint 11 Plus is the Qume Connection module, an interface module that plugs into the back of the printer enabling it to work with any computer. Modules cost $95 and are intended to allow the same printer to be used with computers of differing parentage. The Sprint 11 Plus sells for $1681. □

Data Impact Products DI-1000 daisywheel printer.



The Morrow printer series: (left to right) MP100, MP200, with optional tractor feed, MP300.

Firms Mentioned in This Column

Anadex, Inc.
9825 DeSoto Ave.
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Data Impact Products, Inc.
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Mannesmann Tally
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Kent, WA 98032

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2350 Qume Dr.
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Paramus, NJ 07652

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Tustin, CA 92680

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Print sample: Morrow MP100 daisywheel printer.

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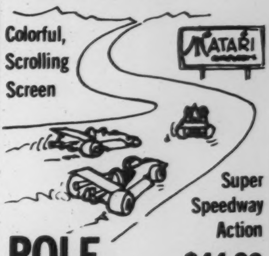

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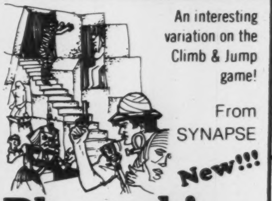

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Race Car Steering Wheel

Tom and Kelda Riley

There are several auto racing programs on the market, but playing them with a standard joystick or paddle doesn't give you the sensation of driving a real machine over a racecourse. This month we will build a steering wheel that closely simulates the controls of an automobile.

This analog input device has a single potentiometer that is turned by the steering wheel and a push button that serves as the accelerator or horn. A special plug/socket lets two of these units operate at the same time, thus opening up the possibility of two-person competitive racing programs. With this controller and appropriate software, game players can learn valuable driving skills such as recovery from skids and automatic reactions to traffic hazards. This steering wheel puts you in the driver's seat.

The steering wheel prototypes were tested on an Apple II Plus computer using the *International Grand Prix* program from Riverbank Software, Inc. (P.O. Box 128, Denton, Maryland 21629). The unit will work on any program that uses one paddle and one push button. The design can easily be adapted for other computers by duplicating the pot value, wiring, and connector of a standard paddle.

This controller is similar to the airplane steering wheel (*Creative Computing*, April 1983, pp. 244-259), but its design is even simpler. In fact, this is one of the most straightforward projects in the series: the parts are easy to find, construction is mostly woodworking, and the wiring requires minimal familiarity with electronics. Take some care with this project and the result will do you proud.

Construction Of The Wheel Support

Figure 1 is a photograph of the finished unit. A detailed side view appears in Figure

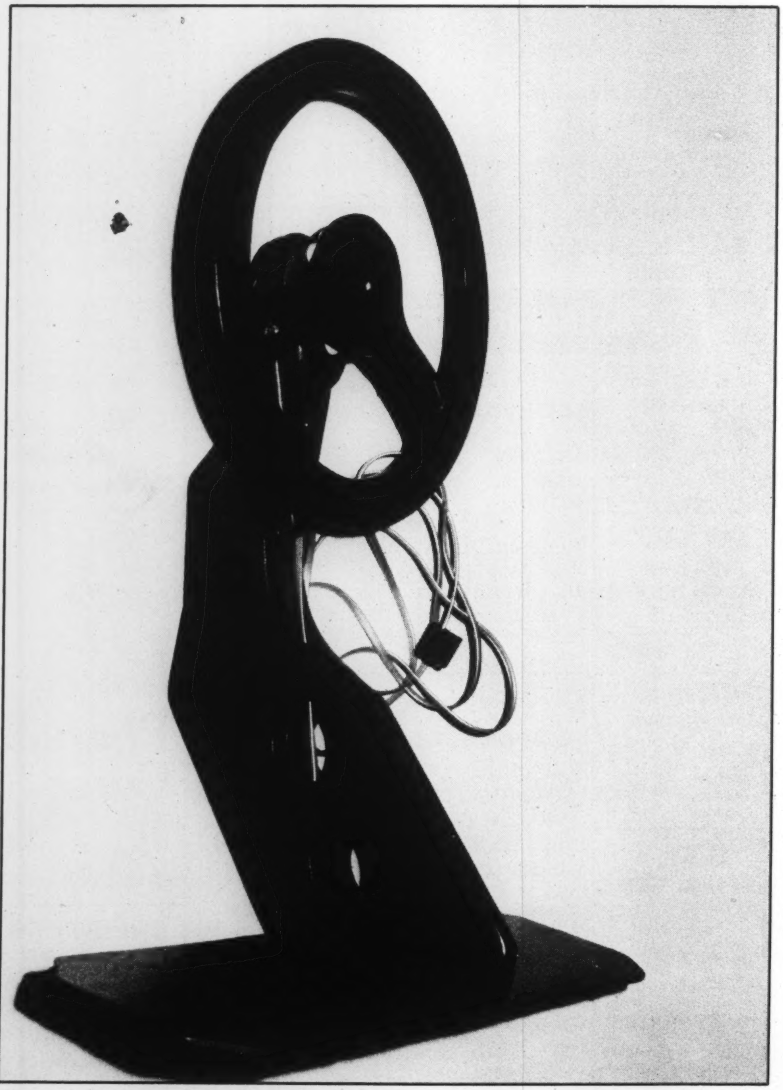

Figure 1. The race car steering wheel.

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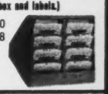

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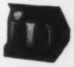

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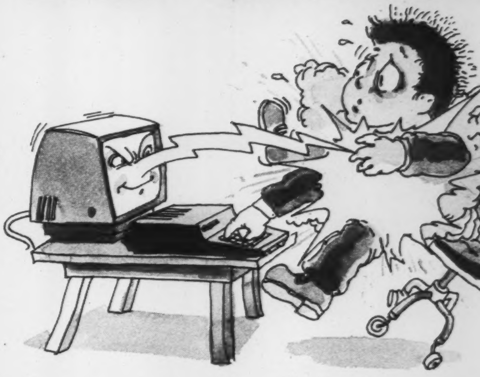

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2. The key parts are the leg board, the lower and upper supports, the pot mount, the three stops, and the wheel itself with hub and switches.

Figure 3 gives you details of the construction. The pot is shown mounted on the upper support so that you can see which electrical terminals are used and the location of the cables. A detailed cross-section of a microswitch mount is also shown. The two microswitches are wired as a single pushbutton.

Most of the parts are 1/2" plywood. A scrap of birch plywood was used for the wheels of the prototypes, but common fir plywood would look almost as good. The plywood was too thick to make a comfortable leg board, so 1/8" tempered masonite was substituted. The wheel hub was cut from a scrap of hardwood (oak or maple is preferred) since hardwood will drill and tap better than softwood. Mount the pot on a scrap of sheet metal that is stiff but that can be cut with sheet metal shears.

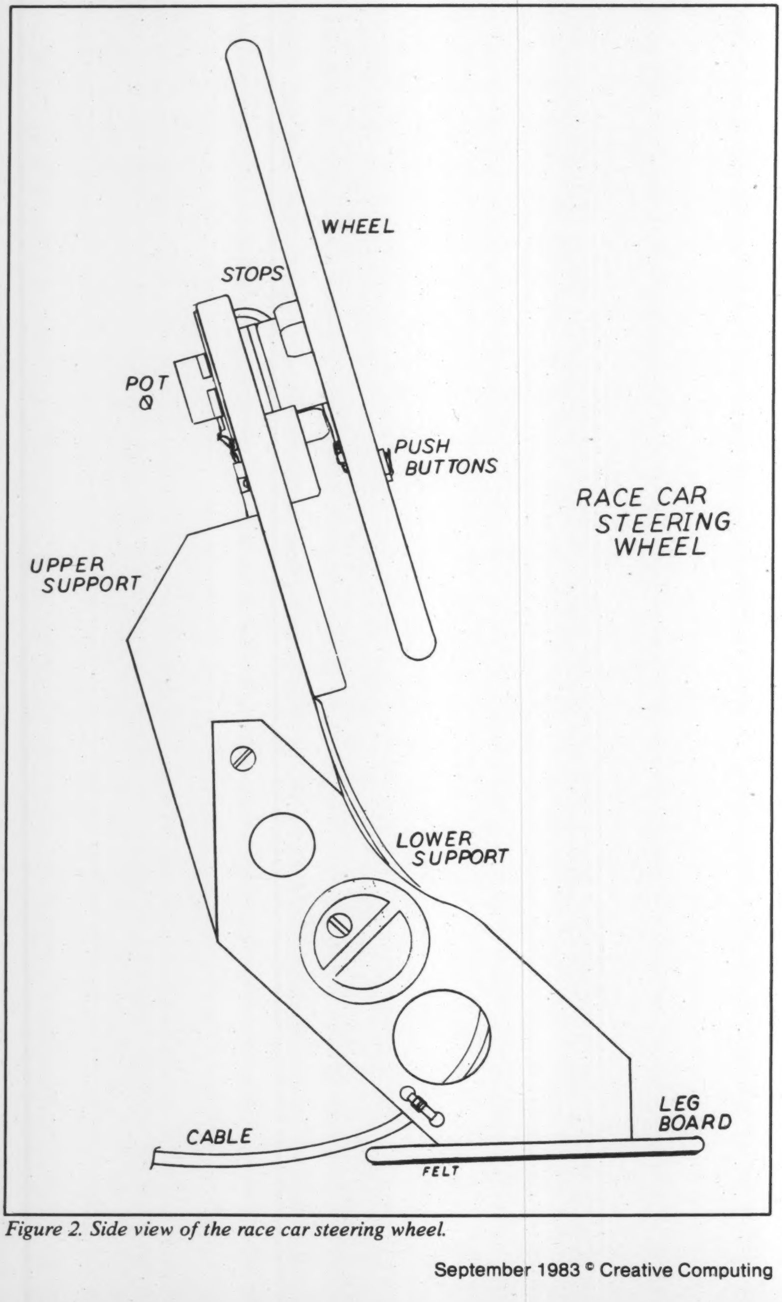

Figure 2. Side view of the race car steering wheel.

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Controller Corner, continued...

Cut the two lower supports from two 3" x 9" pieces of 1/2" fir plywood. This will produce a medium-size steering wheel. If the unit will be used primarily by adults, you may want to add two to four inches to the length of the supports. The extra length is especially desirable if you use the wheel while holding a small child in your lap. Children like to play with this controller even when they are too young to understand the program. A pair of wheels, one with the longer supports, works well for parent/child games.

The holes in the supports are merely for decoration. The large one was cut with a hole saw in a drill and the small one with a 1" paddle bit. Center the two lower support pieces half an inch apart on the leg board and attach them with four 1" x #8 flathead wood screws and carpenter's glue.

The upper support is fashioned from three plywood pieces and the sheet metal plate on which the pot is mounted. Attach the two larger pieces together with two wood screws and glue. Cut out the sheet metal plate, then drill, countersink, and fit it to the pot mount. Hold the metal with vise grip pliers while drilling, or the sheet will spin and cut your fingers. Size the central hole (usually 3/8") to fit the pot. The small hole is for the spin prevention tab on the pot. The four corner holes are for 1/2" x #6 flathead screws. Don't install the small stop mounting block until you complete and trial fit the wheel.

Construction Of The Wheel

The wheel itself can be any size that suits your needs. The 10 1/4" diameter of the prototypes was determined by the size of the material on hand. For wheels much larger than this the size of the upper support will have to be increased. Draw the wheel on the plywood with a compass and straight edge and cut it out with a saber saw or coping saw.

The hardwood disk for the hub was cut out with a power drill hole saw. Drill and tap the two holes before attaching the hub to the wheel. No lubrication is used for tapping in wood, but you should remove and clean the tap several times during the process. Attach the hub to the wheel with carpenter's glue and clamp it with a 1/4" bolt and flat washers through the center hole until the glue dries.

For the prototypes we purchased Radio Shack #275-016 lever switches. Cut a rectangular cavity for them in the wheel spokes with a small wood chisel or X-acto knife. This cavity should stop one ply short of coming through the plywood. Then drill a small hole the rest of the way through for the wire.

Finishing And Assembly

Sand all wooden parts and remove sharp corners with a fine wood rasp. Fill any holes in the edges of the plywood with

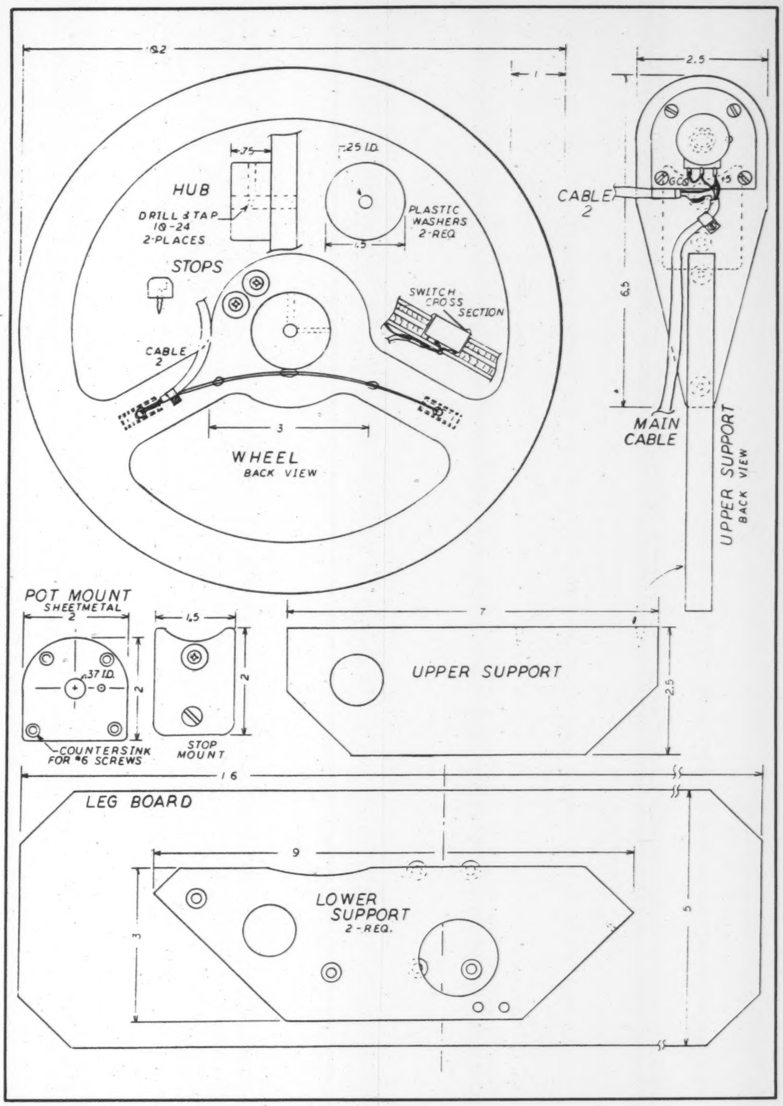


Figure 3. Details.

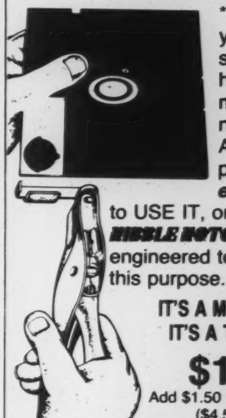
wood putty or with wood splinters and glue. Smooth the edges of the sheet metal pot mount with a fine file.

Now slip the top support between the two bottom supports and secure it with wood screws and glue. Make certain that the screws, which come in from opposite sides, miss each other. The angle of the finished wheel is set by this step. Figure 2 shows the approximate angle, but you can suit yourself since this adjustment is a major factor in personalizing the unit.

Install the pot mount with the pot in place. Place several of the washers shown in Figure 3 on the pot shaft. At least one washer should be polyethylene plastic (cut, for example, from a coffee can lid). The rest of the washers can be masonite, wood, or plastic, cut out with a hole saw. It is easier to add washers than to cut off a pot shaft; about 1/4" thickness of washers will take up the extra pot shaft length.

Drill out the central hole in the hub to remove glue and then fit the hub onto the shaft. Curve the top of the stop mount with a rasp to fit the curve of the hub loosely. You can put a thin piece of cardboard between the hub and the stop mount while marking its position. Then, with the wheel removed, attach the stop mount with a single screw and carpenter's glue.

Now remove the wheel and pot mounting plate and sand all wood parts. The wheel will look best if stained and var-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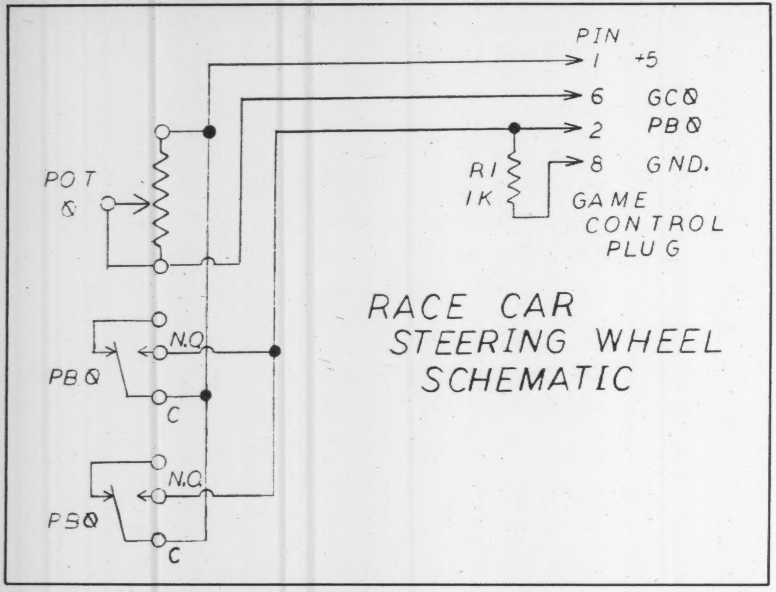

Figure 4. Race car steering wheel schematic.

nished. The other wood parts should get two coats of a bright colored enamel. Finish up with a coat of satin-finish polyurethane varnish over all the wood parts. A coat of varnish not only improves the appearance of the device but also keeps the enamel from leaving marks on furniture and floors.

Electrical Wiring

For the electrical work you will need a pencil soldering iron of 25-42 watts with a fine point, a damp sponge for cleaning the tip of the iron, wire strippers, a pair of small long-nose pliers, and small-diameter resin-core solder. Even if you are a beginner you shouldn't have much trouble with the electronic work involved in this project. Use the proper tools and be careful with the soldering.

Make two photocopies of the schematic (Figure 4). On the first copy, color in each wire and solder joint as soon as you complete it. When you finish your work, color in the second copy as you check each connection.

Buy long-shafted pots of good mechanical construction. They should have a screw driver slot on the end; you will have to cut the slot with a hacksaw if the pot lacks it. Figure 3, the back view of the upper support, shows the terminals to which you will be soldering the cable wires.

For the switches, use any small momentary-contact, single pole single throw, normally-open switch that can easily be mounted on the wheel spoke. The hinge on the Radio Shack lever switch is somewhat weak so we reinforced it with a matchhead size dab of silicone sealant. The two switches are wired so that either of them will act as PBO and are connected together by a pair of small wires.

As you can see in Figure 4, only a three-conductor cable is required for a unit. We used a four-conductor telephone cable and doubled up the +5 supply wire. The cable can be secured to the lower support with a plastic-coated wire tie passed through the two small holes shown in the lower support.

The cable from the pot to the wheel can be secured by forming a small flag, or tab, on the side of the cable with electrical tape. Wrap several layers of tape around the cable, leaving the 1/4" flag off to one side. On the pot mount end secure the flag under the mounting plate; on the wheel end use a small flathead screw and washer to secure the flag. Figure 3 shows each end of this cable so that you can correctly route it.

The cable is about 11" long and makes a loop behind the wheel. We used a piece of the four-conductor telephone cable, although only two small conductors are needed. You can work out the exact length and placement of the cable after the stops are installed.

The plug/socket shown in Figure 5 is similar but not identical to the one for two-person games described in our article, "Multiple Socket Extensions" (*Creative Computing*, May 1983, pp. 260-271). With this plug/socket a second single-pot paddle can be plugged into the back of the first race car wheel, and the second unit will function as GC1 and PB1. You will be able to use two steering wheels for competitive racing games as soon as someone writes the software.

The plug/socket is a standard wire-wrap socket on which all pins except 6, 3, and 10 are cut to 1/2". Cut pin 6 to about 5/8" and cut pins 3 and 10 to 1/8". Then bend the pins out slightly and straighten them to fit over the spades of a 16-pin DIP header. Plug the header into a loose socket before soldering and double check to be certain that both #1 pins are on the same end. Pin 6 must be bent across to reach spade 10 on the header, and pin 2 bent to reach spade 3. Install the pull-down resistor R1 between the socket pins. The cable usually enters from the pin 8 end. If you have difficulty inserting a plug into the socket after the soldering, stick a sewing needle into each hole in turn to realign the socket parts.

If you decide to make a second steering wheel you will want to use a standard plug/socket on it so that foot pedals can be used with the wheels. (Our design for foot pedals is included in *The Controller Cookbook* from Creative Computing Press.)

Final Adjustments

Now mount the single stop on the upper support. For all three stops you can use small rubber feet or faucet washers held on with pan-head screws. Reinstall the wheel with the washers on the pot shaft,

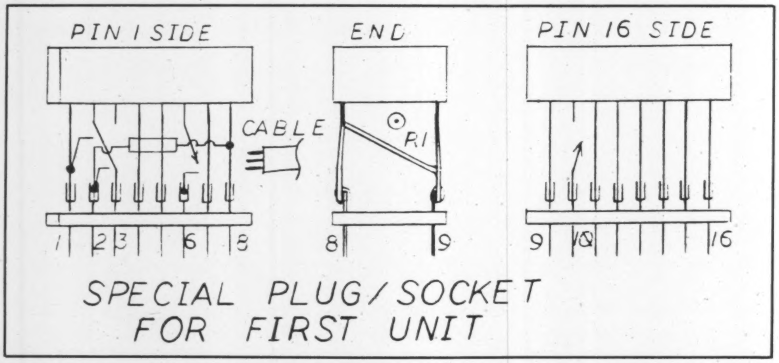

Figure 5. Special plug/socket for first unit.

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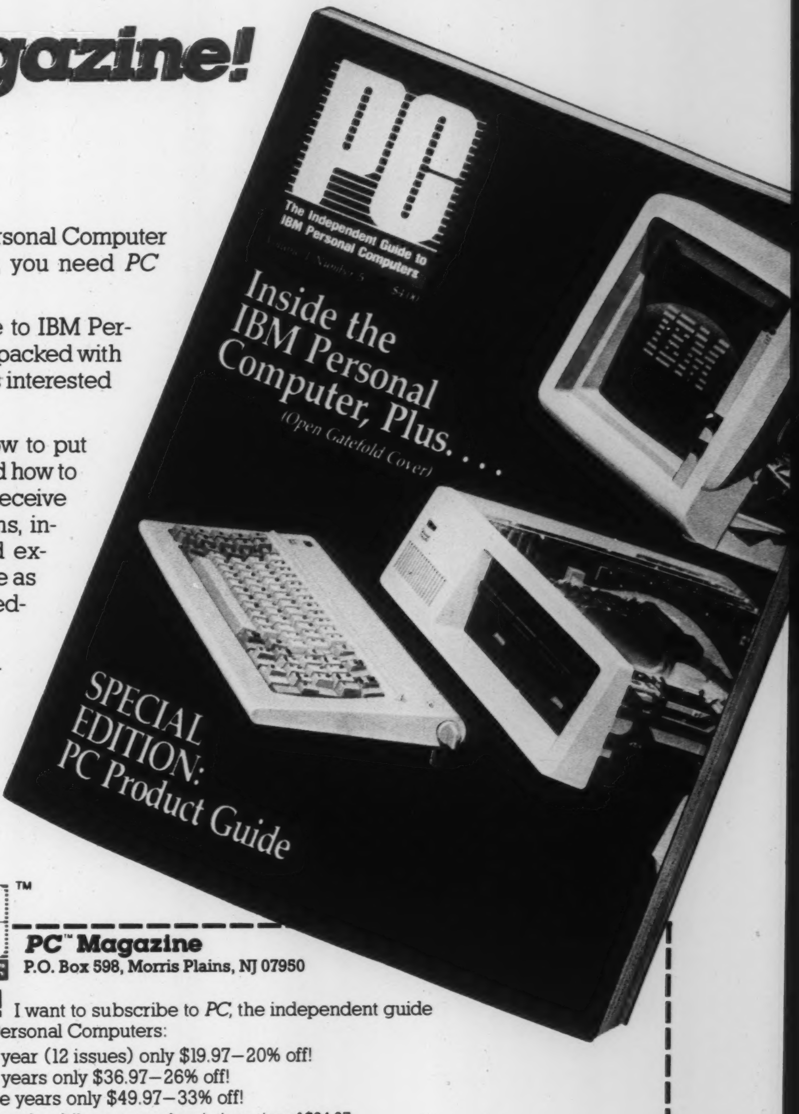
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10 ft.	Telephone cable, #278-366	Radio Shack	1.10
1	16-pin DIP header	Jameco	.70
1	16-pin wire wrap socket	Jameco	.70
3 sq. ft.	Plywood, fir, ½"		2.00
1 sq. ft.	Tempered masonite, ⅛"		1.00
11	Flathead wood screws, 1" x #8		1.00
4	Flathead wood screws, ½" x #6		.50
4	Panhead wood screws, ½" x #6		.50
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	Paint, varnish, glue		2.00
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leaving the set screws loose. The best set screws are the allen-type, but those with standard screwdriver slots will work.

At this point install the main cable and plug, but leave the cable that runs to the switches disconnected. Check your work visually against the schematic (Figure 4). If you have a multimeter, check the resistance between pin 1 and pin 8. This must measure at least 50 ohms on any controller and should be completely open (infinite) on this unit.

Turn your computer off, plug in the new controller, and turn the computer back on. If start up is not completely normal, turn it off immediately and recheck all work on the steering wheel. When the system starts up properly, run a program that will verify the functions of the controller. You need to see the readings of GC0 and PB0 continuously so that you can adjust your unit for full scale and zero.

Try turning the wheel left and right to determine if you can get readings over the full range of 0 - 255. Center the wheel and adjust the pot shaft inside the wheel with a screwdriver until you obtain a reading of 128. Then press the wheel firmly onto the shaft and tighten the set screws.

Turn the wheel gently clockwise until you feel the internal stop. Back off until the reading just becomes 255, and place the second stop on the wheel snugly beside the first stop, which is mounted on the upper support. Mark the center of the second stop with a sharp point. Follow the same procedure counter-clockwise for 0, and mark the third stop. Turn the computer off and unplug the steering wheel. Remove the wheel from the pot shaft and install the two stops on it.

The wheel can now be reinstalled and centered on 128. The readings should cover the full range from 0 to 255, but when you turn the wheel you should hit the external stops before you reach the weaker stops inside the pot.

The pushbutton cable is installed by first attaching it to the upper support. Then experiment with various lengths of cable while turning the wheel. This cable should make a single loop behind the wheel to keep it out of your way while you are playing. When you have determined the correct length and direction for the cable, install a tape flag and screw it onto the wheel near the hole for the switch wire.

As noted in Figure 4, both switches are wired in parallel so that either of them can function as PB0. This lets you use either hand to press the pushbutton. The cable wires are attached to the common (C) and normally open (N.O.) terminals. You can secure the pair of wires between the two switches to the back of the wheel with silicone sealant.

Finishing Touches

You may want to cover exposed electrical connections with silicone sealant (clear sealant is the least messy to work with). You can cover the bottom of the leg board with cotton felt, gluing it on with contact cement. A decal or paper cutout glued to the center of the wheel looks sporty. Be sure to draw a number on the sides of the lower support with a felt tip marker. We used 0 for the first wheel and 1 for the second. Numbering the units will help you keep track of which is which when you play a game.

Test your unit one more time with a paddle checkout program and then run your favorite racing game.

A Note on "Controller Corner"

This is the last in a series of six articles on homebuilt controllers for personal computers. These and other projects are included in *The Controller Cookbook* from Creative Computing Press, scheduled for release in October. In addition to the foot pedals we mentioned, the book features an Atari to Apple adapter and the greatest joystick ever, Super Stick.

For readers who are intrigued by the idea of building a piece of hardware for your computer but somewhat uncertain about your skills, we present an electronics tutorial and step-by-step soldering instructions.

In the meantime, keep writing to us. We want to hear about any problems you encounter and about your successes in building and improving these devices. We have already incorporated several of your comments into the book. For now, good luck in your efforts to expand your knowledge of personal computers. ☐

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outpost: atari

Well summer is almost over, and though I well know how quickly summers tend to pass, I'm beginning to get worried. Each succeeding summer seems half as long as the summer preceding it. And it is small solace to consider that at a halving rate summer will never disappear entirely (remember that paradox from school days)? I'm afraid that by the time it feels like only a week or so between April and October, my morale will be severely eroded.

Enough. I have a lot to say this month and not much space in which to say it. Indulge me if the segues are a bit rough this time around, and the tone more one of a stream of consciousness. I have too many varied topics to tie together, and no device to smooth things over. So you are warned; on to business.

Scuttlebytes

If you have not yet seen the Atari sidebar in the CES coverage up ahead in this issue, place a bookmark here and please go check it out. You are excused. It is simply the nicest news from Atari since its introduction of the 400 and 800 machines in 1979. Atari is not merely in the micro business to stay, or even a mere tough comeback competitor. To use the colloquial, Atari is positioning itself to "blow away" the rest of the field if it does things right. Doing things right in this case consists of getting the products to market fast and keeping prices down. Ignore what you read in *The Wall Street Journal* and listen to me: Atari computers will yet wrest a major share of the consumer computer market.

What about the Coleco Adam? Well, it is a nice machine. But I'm wondering just how real it is at this point. And I am concerned that this "integration" forces me into buying a printer whether I want to or not. Think about it. What machines give the Adam a real run for the money? Only Atari.

John J. Anderson

Of course Atari could have staked out the field two years ago. There has been a dangerous delay. It has not been fatal—just nearly fatal. Now Atari computers are here for keeps.

Alda News Fit to Print

The most obvious symbolic evidence of this at the present time is a famous person: Alan Alda. He will be helping Atari sell computers for the next five years. And they couldn't have picked a better, or nicer guy.

When Mr. Alda was first unveiled at an Atari CES party in Chicago, excitement ran very high. The man fairly exudes intelligence, sensitivity, and charm. Even if he hadn't opened his mouth, the crowd would have loved him. And when he did open his mouth, the crowd learned of his sincere interest in the power of the home computer. He spoke of its growing popularity as an entertainment medium. He spoke of its growing power as an educational tool. And while he admitted that he was not any sort of expert on microcomputers, he voiced a commitment to learn, and with a smile, invited the world to learn along with him.

He will be learning, by the way, on Atari computers. Why? For the money? "Because Atari computers are the best," that's why. Who can argue with that?

You get the feeling that this is a man who will be an alert and active spokesperson as opposed to a celebrity for sale. You get the feeling that this is a man who will not be selling pudding on TV anytime soon.

How can I back this up? Well take the question he was asked right at the podium that night in Chicago, his first night as Atari user number one. How, he was asked, did he feel about the fact that Atari, in its corporate wisdom, did not credit its software authors? He paused. His poise crackled for 0.02 nanoseconds. He smiled. "Well," he said, "I guess they are entertainers just like I am. They probably should get credit for that. My first suggestion, then, to Atari is that they think about ways to give individual credit to those who deserve it." Tumultuous and sustained applause. This man is my kind of spokesperson.

Merging Terrific

There is further evidence that Atari has gotten its act together. Take, for example, the merger of the old Consumer Electronics Division, which used to handle the dedicated home video games, and the old Home Computer Division, which was the ostracized and unprofitable division that just happened to market the best consumer microcomputers in the world. How utterly reasonable. Now they can quit competing with each other and start competing with the competition.

Let's talk about games for a minute. I have been hard in past columns on the Atari 5200, the supposed "Supergame" successor to the VCS. It is widely known that the 5200 is an Atari computer in drag, with the compatibility built out. If Atari had introduced a computer-compatible supergame last year, ColecoVision would not have such a large consumer base now.

Anyway. Back when I was soliciting suggestions for improvements on the now-defunct model 1200, a few people said "let it run 5200 games." I didn't report the suggestion at the time, and I'll tell you why. In Sunnyvale I had just seen the then-new *Kangaroo* for the 5200, and been shocked at its low quality. Atari software had up until that time been synonymous in my mind with top quality. *Kangaroo* made the 5200 look

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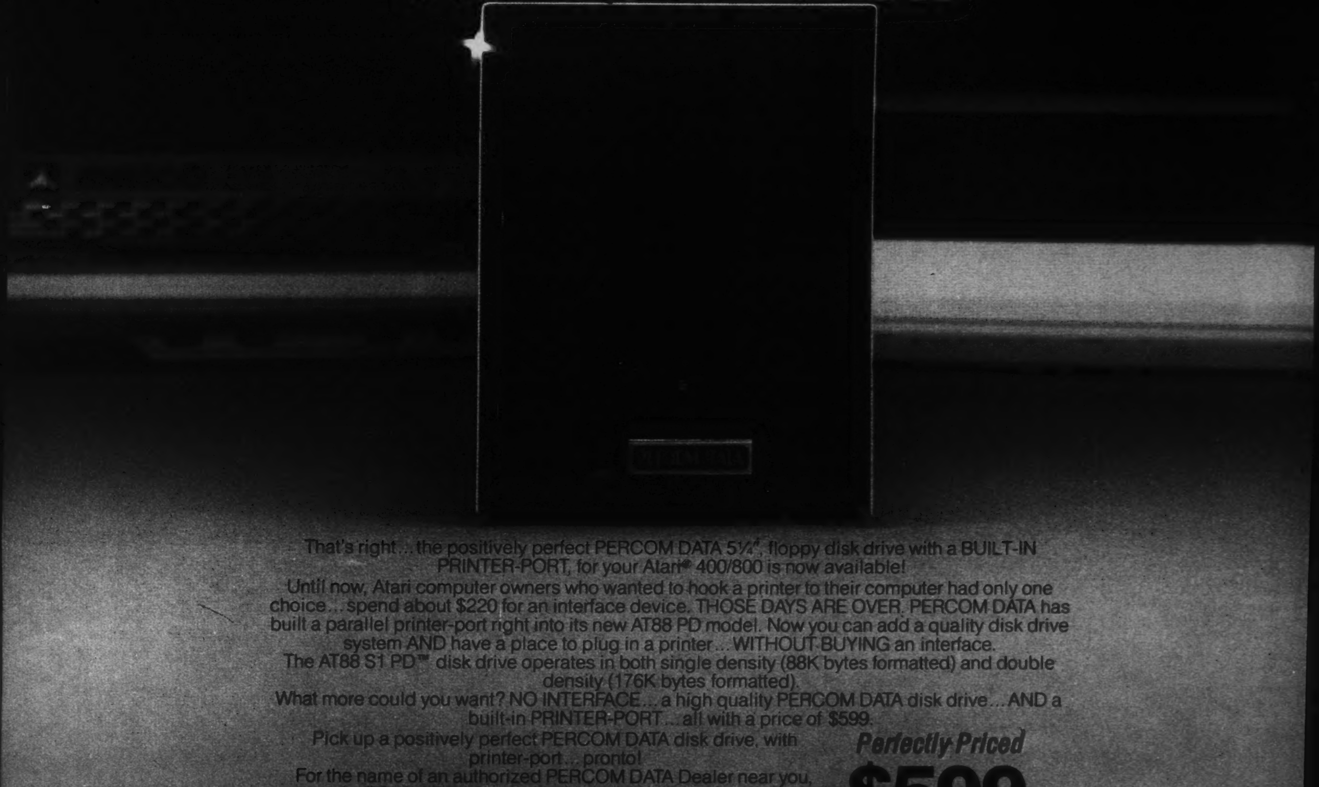

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Outpost: Atari, continued...

like a VCS in a slick box. I couldn't believe they had accepted it. It was appalling. Why shoot for compatibility with that thing, I reasoned? Forget about it.

Gaming Momentum

Since that time, I admit that some very nice games have come out for the 5200. The versions of *Centipede* and *Qix* for the 5200 are much snazzier than the same Atari computer carts. I still strongly object to the pot controllers and triggers on the 5200 machine, which are incredibly slow and have stick boots that wear out in weeks. And why buy one if you already have an Atari computer? Such a duplication of machinery!

So what is the solution? Well, some hackers seem to think the answer is dumping and customizing the front end of 5200 cartridge programs to run as disks on Atari computers. Atari, are you listening? Bet that rankles. There is an easy answer, though.

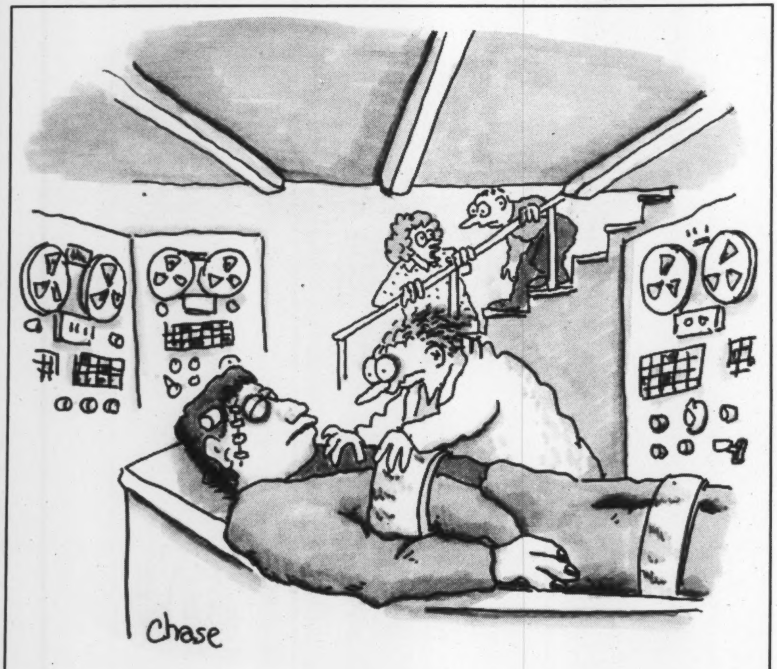
It is time to develop a games expansion box, which allows 5200 carts to be played on the new computers. Compatibility, fellas. That word you learned recently. Think of the time, manpower, and money you could save by making the dedicated game machines and computers cartridge-compatible—even at this late date. In Valspeak: Like wow man. What a concept.

To wrap up this mini-games section of the Outpost, some not-so-mini tid-bits:

- One thing that sort of shook me at the CES was the sight of Apple, TI, IBM, TRS-80, and Commodore software from Atari. I guess it was provincialism on my part that made me wince so, and I later convinced myself it was okay. The stuff looked pretty good, and that is the important thing—quality. No more 5200 *Kangaroos,* please, for anyone's machine. And it certainly makes sense for Atari to get full mileage out of the titles it acquires, rather than letting other companies get the jump.

Besides, software is just like records, and Warner Communications already knows how to sell those. It's a natural—selling what you are most comfortable selling.

- Nolan Bushnell is back on the Atari payroll. Everyone looked to Nolan to utterly waste Atari Coin-op come October, when his restraint contract expires. Atari must have been scared of a possible grudge too, since it spared no expense to buy the rights to Nolan's new and as yet unseen Pizza-Time coin-op video games. The deal came as the kicker to the settlement of some long-standing legal hassles between Bushnell and Atari, the company he started in his garage. It really was something of a surprise, even to supposed "insiders." If



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Outpost: Atari, continued...

trickle-down applies, Nolan's new contributions will probably stand to benefit the Atari computer owner somewhere down the line. Though it may be quite a way down the line.

- Atari has acquired all home rights to Nintendo's Mario Brothers arcade game. This is the latest coin-op addiction among associate editors Linzmayer, Arrants, and Anderson, and boy won't our change pockets be glad when a home version becomes available. Nintendo had a Mario Brothers game on free play at the CES and Owen and I were lucky to have seen anything else during the course of the show. The game is terrific.

  Of course, it depends on the highest quality graphics and sound for its appeal. The Atari computer is capable of providing same, but only in the hands of a competent programmer. Let us pray.

- I saw the upcoming version of *Joust* at the show, which was the most recent editors' craze before the crushing onslaught of Mario Brothers, and am happy to report that it looks and plays quite well. One can only hope that high standards of quality will continue to be upheld. Any other behavior can only constitute suicide, with Coleco breathing down Atari's neck.

And now for something completely different.

The Users

I had the opportunity last week to speak at a meeting of the Jersey Atari Computer Group, most commonly known as JACG. They meet at Bell Labs in Murray Hill, NJ, and have got to be among the largest Atari user's groups on the East Coast. I attended a meeting on a hot, sunny summer's Saturday, and was amazed to see a turnout of over 400 people.

The group is extremely fortunate to have the use of Bell's Murray Hill auditorium, complete with sound system, overhead projectors, and projection TV. The club officers are getting a bit concerned, however, as attendance is climbing to a point where it will soon outgrow even the Bell facility.

It nevertheless warmed my heart to sit in the company of so many other Atari computer enthusiasts. Art Leyenberger demonstrated some Atari games. Art, who edits the fine JACG newsletter, has contributed some Atari reviews to this issue, and is a reviewer you will be seeing more of in future pages of *Creative.* Dick Kushner, president of the group, reported on his visit to CES, and the new Atari product line.

Significantly, Atari paid for Dick and other user's group presidents to attend the CES—recognizing the importance of user group support in the introduction of its new products. I was also impressed that a video crew from Atari was taping the meeting I attended.

In my own impromptu remarks, I tried to underscore the importance of healthy and active user's groups in the future of Atari computers. It has taken Atari a while to realize that user's group support is more than just professional public relations or the APX program. It now knows that its user's groups are probably the best, and only real friends it has. Let's hope it stays that way.

The JACG now has a 24-hour bulletin board; the number is (201) 549-7591. Give them a call if you like. Or write them care of Dick Kushner at 58 Dewey Ave., High Bridge, NJ 08829.

And you other user's groups, keep up the good work. Remember, it is the informed user that can best keep Atari on the right track, now that it has found the track.

New Third-Party Hardware

What with all the new product announcements from Atari, it is easy to forget our old buddies, the third-party developers. They, it should be duly noted, have developed much of the hardware that Atari will market under its own name. The remote control joysticks, new light pen, CP/M module, graphics tablet, and other new products were developed by independent outside concerns, then sold or licensed for use by Atari.

There are new products directly from third-party sources as well. Here is a report on just a few that caught my eye and my fancy:

- By the time you read this, Atari-compatible disk drives from Rana Systems should be on the shelves. A double density model with 180K of storage will be available, which in single density mode will be completely compatible with the current format.

The unit features an LED display (see photo) which indicates drive number, density setting, and error status. It will be priced under $500. For more information contact Rana Systems, 20620 South Leapwood Ave., Carson, CA 90746. (213)538-2353.

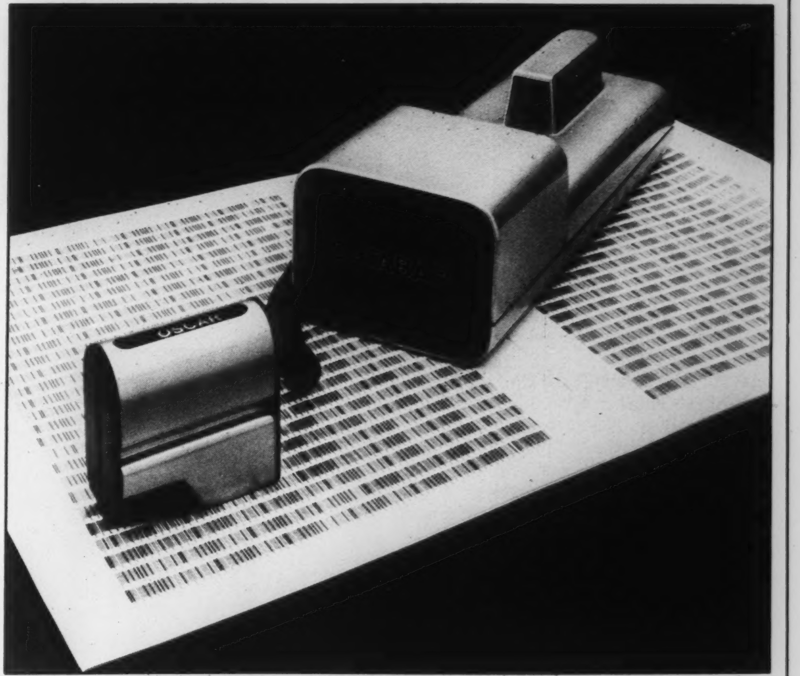
- Microbits Peripheral Products is producing a $100 parallel printer interface. This Centronics parallel interface plugs into controller jack 3 on 400 and 800 machines. It also includes a replacement chip to be installed on the operating system board.

The company has also announced a direct-connect modem that attaches to controller jack 4 for $200 and includes smart terminal software and cabling.

If you wish to save money, are having trouble finding an 850 module (a friend from Canada reports that they are over $250 there, if you can find one), or just don't like the idea of buying one, these products from Microbits can get you around the need for an 850. For more information, contact Microbits Peripheral Products, 434 West First St., Albany, OR 97321. (503)967-9075.

- The most interesting third-party peripheral at the summer CES was the Oscar Bar Code Reader from Databar Corporation. This low-cost optical scanner will interface to the Atari computer, allowing the user to enter programs by scanning zebra-stripe code similar to that appearing on our front cover.

I have been interested in the use of bar code with home computers for some time, and foresee a day when magazines such as ours will include bar-coded listings. Bar code is the only print medium with anything approaching a respectable baud rate.



Databar code reader could revolutionize software publishing.

Rana Systems 1000

Rana drives offer an intelligent alternative.

Outpost: Atari, continued...

The Oscar unit will retail for $79.95. Databar intends to produce a monthly magazine of bar coded programs, available by subscription. Databar Corporation, 10202 Crosstown Circle, Eden Prairie, MN 55344. (612)944-5700.

Relisting the Unlistable

Another speaker at last week's JACG meeting was Ernie Rice, of *ERedit* fame. He now has three other Atari packages, *DiskFix*, *Dial*, and a disassembler. But it is *ERedit* that really takes the prize. Try finding another disk-based "archiving editor," that allows you to restore killed files. Ernie's utilities are the finest I have seen for the Atari.

Well. I mentioned to Ernie a while back that a short program line to render code utterly unlistable had appeared in the February 1983 Outpost. He found that to be a challenge, and from the start said the method could be cracked. Then I got a few letters from unfortunate souls who had made their programs unlistable, only to realize they had no listable versions left for improvement or modification. They asked how to undo the process. I asked Ernie to help.

He came through. Listing 1 shows the initial modification, to be appended to a program as the last line of code. To make a program into a "RUN only file," add the line, then GOTO it in the direct mode. Listing 2 is Ernie's method for undoing the process. He sure knows his Atari OS.

Good work, Ernie. He can be reached, by the way, at EHR3, 174 Summit Ave., Summit, NJ 07901. (201)277-6785.

Listing 1.

```
10000 POKE PEEK(138)+256*PEEK(139)+2,0:SAVE "D:FILENAME":NEW


Note: Line number must be highest in the program.
```

Listing 2.

```
10000 OPEN #6.12.0."E:":POKE 710.0:DIM FN$(15)
10100 ? CHR$(125);"FILENAME:";:INPUT #6:FN$:OPEN #1.12.0.FN$
10200 GET #1,X1:GET #1,X2:CNTR=3
10300 IF X1=255 THEN 10500
10400 X1=X2:GET #1,X2:CNTR=CNTR+1:GOTO 10300
10500 IF X2=127 THEN 10700
10600 GOTO 10400
10700 WMARK=CNTR
10800 IF X1=0 THEN 11000
10900 X1=X2:GET #1,X2:CNTR=CNTR+1:GOTO 10800
11000 IF X2=128 THEN 11200
11100 GOTO 10900
11200 WVAL=CNTR-WMARK
11300 ? "ZAP LOCATION ";WMARK;" TO ";WVAL
11400 CLOSE #1:OPEN #1,12,0,FN$
11500 FOR A=1 TO WMARK-1:GET #1,X:NEXT A
11600 PUT #1.WVAL:CLOSE #1
```

Listing 3.

```
1 DIM SAM$(10)
2 READ SAM$:A=USR(8199):FOR T=1 TO 100:NEXT T:GOTO 20
```

Listing 4.

```
     1 DIM A$(100),SAM$(1) 20 READ A$:FOR L=1 TO LEN(A$):
SAM$=A$(L,L):A=USR(8199):FOR T=1 TO 100:NEXT T:NEXT L:GOTO 2
```

Listing 5.

```
10 DATA 255,255,0,29,223,29,32,223,29,169,128,141,231,2,169,31,141,232,2,162,0,1
89,62,246
20 DATA 157,0,30,232,208,247,189,62,247,157,0,31,232,224,59,208,245,162,0,189,19
8,254,157,59
30 DATA 31,232,224,48,208,245,162,0,189,141,252,157,107,31,232,224,16,208,245,16
2,0,189,0,228
40 DATA 157,224,29,189,32,228,157,240,29,232,224,16,208,239,162,31,142,116,30,14
2,142,30,142,147
50 DATA 30,142,44,31,142,111,31,202,142,20,30,142,32,30,142,47,30,142,223,30,142
,41,31,169
60 DATA 164,141,19,30,169,111,141,31,30,169,18,141,43,30,141,46,30,141,99,31,169
,107,141,115
70 DATA 30,141,43,31,162,60,142,146,30,202,142,141,30,142,110,31,169,227,141,190
,30,169,159,141
80 DATA 222,30,169,192,141,40,31,162,6,169,224,157,27,3,169,29,157,28,3,162,12,1
69,240,157
90 DATA 27,3,169,29,157,28,3,169,255,141,228,29,169,29,141,229,29,169,101,141,23
0,29,169,30
100 DATA 141,231,29,169,163,141,244,29,169,30,141,245,29,96,0,6,23,6,165,12,141,
1,29,165
110 DATA 13,141,2,29,169,0,133,12,169,29,133,13,169,128,32,3,29,96,226,2,227,2,0
,6
120 OPEN #2,4,0,"K:":TRAP 160:OPEN #1,4,0,"D:AUTORUN.SYS"
130 ? "AUTORUN.SYS ALREADY EXISTS!":? :? "TYPE 'Y' TO WRITE OVER IT"
140 GET #2,A
150 IF A<>ASC("Y") THEN END
160 CLOSE #1:OPEN #1,8,0,"D:AUTORUN.SYS"
170 TRAP 220:FOR I=1 TO 264:READ A:PUT #1,A:NEXT I:IF A<>6 THEN 220
180 CLOSE #1:? "NEW AUTORUN.SYS TO DISABLE KEYBOARD":? "SPEAKER IS NOW ON DISK."
190 ? "TYPE 'Y' TO BOOT DISK AND RUN":? "AUTORUN.SYS"
200 GET #2,A:IF A=ASC("Y") THEN A=USR(58487)
210 GOTO 230
220 IF PEEK(195)=6 OR A<>6 THEN ? "ERROR IN DATA MESSAGES!":GOTO 240
230 ? "ERROR ";PEEK(195);"! CAN'T CONTINUE..."
240 END
```

If you don't have a copy of SAM, get one.

Say It Again, Sam

I got a nice suggestion from reader David Stambaugh, of Washington, IL, on how to make tedious entry of DATA statements a bit easier if you have a speech synthesizer—get it to read the numbers back to you. If you have *SAM* from Don't Ask Software, the program in Listing 3 is for you. Using Reciter on the *SAM* disk, the program reads your numerical data back to you as single digits.

If there is a problem differentiating the breaks between numbers, increase the delay loop in line 2. This program will also attempt to read clusters of characters as words. To read single alphabetic characters, try the program in Listing 4. Remember that *SAM* cannot pronounce graphics characters, or differentiate between upper- and lowercase or inverse video. It is most helpful for checking strings of numeric data.

If you don't have a copy of *SAM*, get one. I reviewed it in December of 1982, and at $60, called it "one of the best buys available for the Atari computer." For more information, contact Don't Ask Software, 2265 Westwood Blvd., Suite B-150, Los Angeles, CA 90064.

Click Fix

In the May 1983 Outpost, I stated that I knew of no way to silence the inboard Atari speaker through software. In the June column, I outlined a means of installing a removable hard switch in the Atari to get around the problem.

Then along came Steven Otto of Madison, NJ. He provided a program that disables the bell and click under most normal conditions. Another impossibility realized. Good job, Steve.

The program in Listing 5 runs as an AUTORUN.SYS file. It will run on any Atari machine, but blows up if the Disk Utilities Package is loaded.

The program is reset-proof and reinitializes whenever SYSTEM RESET is pressed. It uses the memory from $1D00 through $1F7F, resetting the MEMLO pointer to five bytes above program space.

Table 1 shows the most powerful aspect of the program—that the NOCLICK routine can be enabled or disabled from the screen editor or keyboard handler with just a couple of POKEs. You can also enable or disable the bell routine, but you cannot disable the bell while either of the other varieties of clicking is enabled.

Perhaps it is still not a means of silencing the *Atari Word Processor* or the *Wizard and the Princess* through software, but it is a working software silencing method.

And so until next time, farewell from the Outpost. Talk to you again soon. ☐

Table 1.

To disable the click from the screen editor (default):

```
POKE 801,224: POKE 802,29
```

To disable the click from the keyboard handler (default):

```
POKE 807,240: POKE 808,29
```

To enable the click from the screen editor:

```
POKE 801,0: POKE 802,228
```

To enable the click from the keyboard handler:

```
POKE 807,32: POKE 808,228
```

To disable the bell (default):

```
POKE 7723,18: POKE 8035,18
```

To enable the bell:

```
POKE 7723,10: POKE 8035,10
```

To disable the click from both devices, but to work with the bell routine:

```
POKE 7870,227
```

To enable the click from both devices, and work with the bell routine:

```
POKE 7870,216
```

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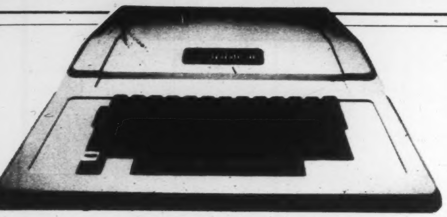

le cart...apple cart...apple

Stephen Arrants

Welcome back! This month's column will be a mixture of things. We'll look at some new products, take care of some old business, answer some of your questions, ask some of you, and correct some errors from the June issue.

Last month, I gave you a short program that appeared to do nothing special. When run, it cruised through your Apple's memory, showing you what was inside your machine. At first glance, it didn't look like the most useful little program in the world. But think about it. You actually *saw* what was in memory.

I hope it proved to you that *you* control your computer. Many users, alas, believe that the machine only does what it wants to do. A computer only does what *you* tell it to do. If you looked closely, you saw DOS commands flash across your screen. DOS, of course, resides in memory after booting a disk. Which brings me to this month's program.

Last month I promised to give you a program that would let you recover a "lost" file. Before we do that, however, let's talk about DOS.

Without DOS, your Apple doesn't even know that the disk drive exists. DOS tells the computer how to get information from or write information to a disk.

An Apple disk is divided into 35 tracks, each of which is divided into 16 sectors; each sector is divided into 256 bytes. DOS occupies tracks 0-2. Tracks 3-16 and 18-34 are for storage, and track 17 contains the disk directory in sectors 1-15 and the ubiquitous VTOC in sector 0.

Three tracks is a great deal of space for DOS. On ten disks you have wasted 30 tracks. Boot a disk with DOS on a Monday, and as long as your Apple is turned on, it will remain in memory through the next weekend and beyond. It doesn't have to be placed back in memory unless you restart the system. Why have DOS on each disk? You could always use the extra space, couldn't you? Since DOS isn't a program, you can't just DELETE it. You could always reinitialize a disk, but you would lose all the data on the disk. Removing DOS isn't difficult. In fact, it is quite easy if you know how. Here is a short program that will give you the extra space.

It works as follows:

Lines 10-20 are self explanatory.

Line 30 clears and sets up the screen.

Lines 40-50 provide an explanation and instructions.

Line 60 tells the Apple to read VTOC.

Line 70 stores all data at 10000.

Line 80 is the read-write-track-sector jump routine.

Lines 90-100 read the sector.

Line 110 writes four bytes by POKEing in 255 to free the sectors.

Lines 120-130 write to the sector monitor subroutine to clear from the cursor to the end of the page.

Lines 140-150 end the program.

The variables used are A$ and B$ for input, and area for the location of data storage.

What this program does is free tracks 1 and 2 by allowing DOS to be overwritten. In a way, this is like deleting a program. Physically, DOS is still on the disk, but as new data are saved, it is overwritten.

It isn't the most elegant program; it doesn't immediately remove DOS. Unfortunately, because of the way DOS does what it does, track 0 is unavailable.

Be *very* careful when typing this program in. One wrong key, and your disk may become dead plastic. *Don't* save it on a valuable disk until you are satisfied that it works correctly and is completely debugged. Thanks to Ian MacNab of Regina, Saskatchewan for this program.

Next month, a track/sector editor and (I promise!) the file recovery program.

New Products

We have just received an exciting new product from Koala Technologies. The Koalapad touch tablet lets you draw

Listing 1.

```
10   REM  IAN MACNAB'S DOS REMOVER
20   REM  THIS IS A ZERO-->0.        THIS IS THE LETTER AFTER N-->O.
30   POKE 33,40: TEXT : HOME
40   VTAB 10: PRINT "THIS PROGRAM WILL FREE AN EXTRA 32 ": PRINT "SECTORS
      (TRACKS 1 AND 2), AND ALLOW": PRINT "DOS TO BE OVERWRITTEN.": PRINT
      "PRESS ANY KEY.";: GET A$
50   HOME : VTAB 12: PRINT "INSERT THE DISK INTO THE DRIVE": PRINT "ARE YO
      U SURE YOU WANT TO CONTINUE?": PRINT : PRINT : PRINT "PRESS <Y>.  AN
      Y OTHER KEY ABORTS.";: GET B$: IF B$ <   > "Y" THEN 170
60   POKE 47084,17: POKE 47085,0: POKE 47083,0: POKE 47091,0
80 AREA = 10000: POKE 47088,AREA -  INT (AREA / 256) * 256: POKE 47089, INT
      (AREA / 256)
90   POKE 768,32: POKE 769,227: POKE 770,3: POKE 771,76: POKE 772,217: POKE
      773,3
100   POKE 47092,1
110   CALL 768
120   POKE AREA + 60,255: POKE AREA + 61,255: POKE AREA + 64,255: POKE ARE
      A + 65,255
130   POKE 47092,2
140   CALL 768
160   HOME : VTAB 12: FLASH : PRINT "FINISHED": NORMAL : PRINT : PRINT "DO
      S MAY BE OVERWRITTEN.": NEW
170   HOME : VTAB 12: FLASH : PRINT "PROGRAM ABORTED.": NORMAL : NEW
```

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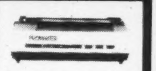
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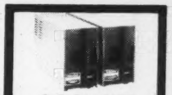
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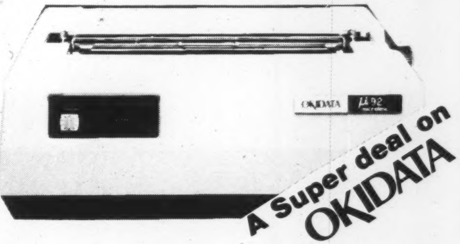

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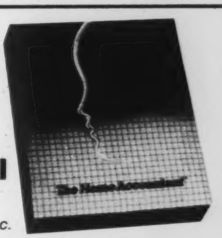

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graphics for video display with your finger or a stylus. Custom keyboard overlays may be added, and the Koalapad can also be used as a game controller. I won't say more about it here. John Anderson is planning a comprehensive review.

The Koalapad touch tablet.

Osborne/McGraw-Hill has published a series of books called *Disk Guides.* These are short, informative reference guides to using the Apple, the IBM PC, Atari 400/800, VisiCalc, and the CP/M operating system. For quick reference, they are OK—certainly easier than leafing through a stack of manuals. The *Disk Guides* are the size of floppies, and can be stored in a disk box. Prices are $6.95 to $8.95, depending on the title.

Do you have a friend who has an IBM PC? Are you tired of spending long hours translating your Apple programs so he can have a taste of the best computer? Is your friend envious of your game collection? Quadram Corp. produces a card called the Quadlink which allows an IBM PC to run Apple software. Quadram claims that 90% of all Apple software will run without a problem on the PC. Programs using half-track protection schemes and programs which read Apple keyboard ports or serial/parallel ports are a problem. Also, some software which uses specific areas of the Apple ROM may not work. For a closer look, read Mark Zachmann's review in the June '83 *PC* magazine.

More On II+ Trade-In

We have been getting some phone calls and letters from readers asking about trading in an Apple II+ for the new IIe. Most ask about the dealers offering the trade-ins. The only advice I can give is: deal with reputable people. If a dealer has been in business a while, has a good reputation, and seems trustworthy, then his deal is legitimate. Follow the same rules you followed (or should have followed) when you bought your II. Keep in mind that a dealer in Boston offering a trade-in won't be worth much to you if you live in Brooklyn and your motherboard begins to smoke.

Remember that if your II+ is under Applecare warranty, you cannot transfer the coverage to the new machine. Your original machine is covered, not the trade-in.

Corrections And Addenda

In our June issue, Ernest Mau did an excellent job in reviewing Apple word processors. When reviewing something as complex as a word processor, errors may creep in. Features supported in one word processor may not be apparent unless the software is in constant use.

AppleWriter II does support the shift key wire modification and takes full advantage of a 16K RAM card. Many keyboard enhancers may be used without worry. Block copying from memory and the overwriting of existing text are available features, and the cursor can be moved a word or a character. Using a WPL program, multiple copies of a file can be printed.

Indenting paragraphs requires setting the paragraph margin (.PM) at a position greater than the left margin. The next sentence after a return will be indented.

The greatest area of confusion is that of using printers. Refer to the printer manual, Apple documentation, or ask your dealer about the correct codes to send to the printer. In general, if the printer is capable of producing different typestyles; *AppleWriter II* can use them.

There are still a few features that I as a dedicated *AppleWriter II* user, haven't gotten used to. I wish that the software were modifiable, since there are some enhancements I would like to add. Now that I have the IIe along with *AppleWriter IIe,* I have to get used to a slightly different system. When I got the IIe I didn't even *consider* different word processing software. I find the *AppleWriter* packages to be about the best available.

Thanks to Scott Cramer, Chris Immroth, Dean Cook, David Mattson, Barry Bayer, Wolfgang Gunther, and other readers for their letters on *AppleWriter II.* We're sorry we missed those facts, but glad you all wrote.

Incidentally, you may experience problems when using *AppleWriter II* with an Apple IIe. The shift key doesn't work; you must still press ESC. Also, when underlining you must press ESC reverse slash at the beginning and end of the underlined areas and ESC SHIFT underline between words. For some inexplicable reason, the FIND command doesn't always work. If it doesn't, I suggest saving the text, clearing memory, and reloading the file. If anyone knows what the problem is, please let me know. I would like to share the information with other readers.

Michael Finé of PAF Computer Consulting in Philadelphia, PA, sent us a method of printing PFS graphs with Pkaso and other printer interface cards.

First, before booting *PFS: Graph,* INIT a blank disk. Remove the disk and boot up *PFS: Graph.* Retrieve an existing graph or create a new one and save it on a PFS data disk.

Next, while the graph is on the screen, remove both the PFS disk and the PFS-format data disk. Insert your blank disk into drive #1. Hit CTRL-RESET *only once.* Apple DOS 3.3 is present.

At this point, the hi-res image is still intact. You now have the ability to send commands to the Pkaso or other intelligent interface card.

To save the hi-res image to disk, type

```
BSAVE filename,
A$2000,L$2000 (CR)
```

To dump using the Pkaso, type PR#1 CR CTRL-IH.

Mr. Finé recommends using the reduced color and medium size modes with the Pkaso.

Answers To Your Questions

To Doug Kline: No, I don't know of anyone using an Apple on a sailboat for

"I didn't say you were lousy with household expenses. I just said I was switching to a color computer so you can see the red ink."

navigation. Can anyone else help him?

To Arlene Rodriguez: Apple-compatible is a term used by manufacturers to mean that at least one Apple program will run on their computer. If you buy an "Apple clone," test the software you are planning to use on it, or check with the software publisher. Many are including the names of Apple compatibles on the outside stickers. And no, I don't recommend buying an Apple copy from overseas. Do you want to ship it back to Taiwan when the Monitor ROM gets nervous?

To Anonymous, Prairie Village, KS: There is only one way I know to run TRS-Model III software on the Apple—translating it line by line.

Now some questions for you. About the only thing I know about the readers of this column is that they either own or plan to own an Apple. That's it. What I would like is some information from you. It will help me get to know the audience and allow me to bore you as little as possible. Please take a few minutes to write down some answers to the following question and drop them in the post. The reader with the most creative answers wins a copy of *InvisiCalc.*

Name:

Age:

What type of system do you have?

What software that you own is your favorite?

What software that you own do you refuse to boot?

Do you use bulletin board services? Which ones?

Do you belong to a user's group?

What non-Apple equipment do you have?

Why did you buy an Apple (or Apple-compatible)?

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The worst thing about an Apple is:

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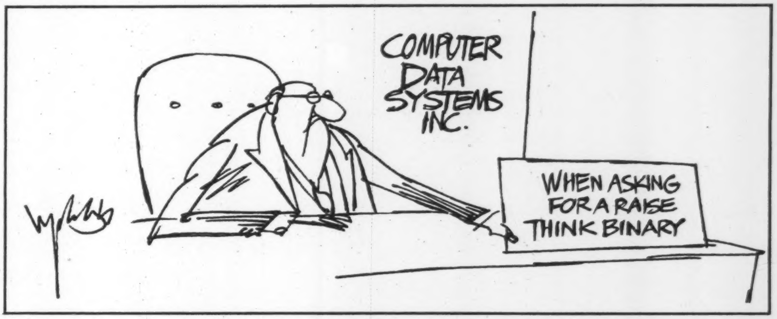
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Coming up

Next month, I will be reviewing two software packages for the IIe, *Quick File IIe,* the Apple database and filing system, and *AppleWriter IIe,* one of the best word processors around.

Check out our Fall Hardware *Buyer's Guide* for reviews of the Apple IIe and the Apple III, and the Franklin Ace 1200. I think you'll be surprised about what Franklin has to offer. It is an attractive alternative to the Apple IIe and a good deal at the suggested price. ☐

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A Sprite Editor For The Commodore 64

This month John Lane presents a short and sweet sprite editor for the Commodore 64. If you would like to get in touch with Mr. Lane, please contact him directly at 260 Main St., Winthrop, MA 02152.—JJA

John Michael Lane

I have used microcomputers extensively at work, but I held off the purchase of a home computer. After a great deal of research, I decided to purchase a Commodore 64 because it seemed to offer the most performance for one on a limited budget.

One of the attractions of the Commodore is its capability for sprite graphics and the promise of creating real time games in Basic. A sprite is a user-defined movable block of pixels that can be placed anywhere on the screen with a few simple commands. On the Commodore 64, a sprite is 24 pixels wide and 21 pixels high. (Total screen resolution is 320 by 200 pixels.) To animate or move an object on the screen, it usually must be drawn pixel by pixel, erased and then drawn again in a different location. This time-consuming process has precluded the use of Basic. To move a sprite of 24 by 21 pixels your program must execute approximately 504 steps to create the original image, another 504 to erase it, and another 504 steps to redraw the image.

With sprite graphics, the image is created in 63 steps and can then be moved with a single command. On the Commodore 64, a sprite can be expanded by a factor of two in the x-direction, the y-direction, or both. (The resolution, however, stays at 24 by 21 pixels.) Sprites can be drawn over one another with either sprite having a predetermined priority so that it looks like one passes in front of the other. Sprites can have transparent windows, so the background image (or another sprite) shows through.

The Commodore, which can detect collisions between sprites, stores that information in a register. It can also detect collisions between sprites and background images and has a separate register to store these. Amazing.

Well it sounded good until it came to creating a sprite. One of the limitations of the Commodore is that its version of Basic contains no graphic commands. Everything is done with PEEKS and POKES. Sprite data are contained in 63 bytes, each of which must be POKEd into a separate memory location. The easiest way to do this is to put the bytes into DATA statements in your program and then read and POKE them into the appropriate location as shown in Listing 1.

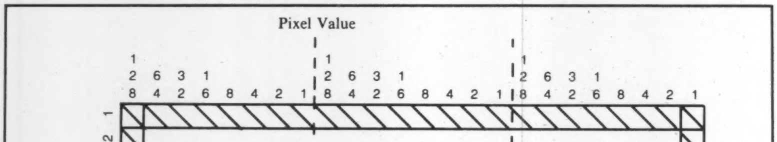

Figure 1.

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Commodore, continued...

Listing 1.

```
10 FOR I=12288 TO 12351:READ A:
   POKE I,A:NEXT
20 DATA 234,34,54,1,0,0,43,45,
   56,128,255,255,253,1,3,0,0,
   0,0,255,255
30 etc. (for 42 more bytes)
```

That kind of coding can hardly be called efficient or friendly.

But that is only a secondary problem. The primary one is that you must translate your 24 by 21 pixel image into 63 bytes.

Figure 1 represents the pixel image of my "gunsight" sprite. With proper programming, it is very useful for zapping bylons, cylons, dylons, nylons, and other menacing aliens. Each line of 24 pixels must be converted into three 8-bit (1 byte) binary numbers. The encoding is simple. A solid square represents a binary 1, and an open square represents a binary 0. Thus the first line across is read 11111111, 11111111, 11111111 in binary or 255,255,255 in decimal. The second line is read 10000000, 00000000, 00000001 or 128,0,1. With a sheet of graph paper and a calculator, I sat at my computer table encoding sprites for my first program. As I stared at my idle computer, it occurred to me that my priorities were backward, and that my first order of business should be to write a program to simplify the coding of sprites.

The rest of this column is the result.

Listing 2 is the sprite maker program. It enables you to draw a greatly enlarged sprite on the screen using the keyboard and cursor controls. Once the sprite is complete, the image is converted to bytes and stored in a cassette file for further use. Although the sprite is converted to 63 bytes of information, my program adds a 64th byte that is always zero. This simplifies the loading of sprites into memory because the Commodore 64 reserves 64 bytes of memory for each sprite.

Lines 5-45 let the user select the method to be used in creating the sprite.

Lines 50-85 set up the screen for display of the 24 by 21 pixel image.

Lines 90-98 display the + pseudo cursor.

Lines 100-170 evaluate the keyboard input. (L is the line number of the current pixel and C is the column number of the current pixel.)

Lines 600-710 check to see that the cursor is still in the sprite area and then POKE the appropriate character into the register for the screen memory. The expression (1024+40*L+C) translates the position of the pseudo cursor into the corresponding register holding the screen display.

Listing 2. Sprite Maker Program.

```
00005 DIM N(64)
00010 PRINT "(CLEAR)"
00020 PRINT TAB(80)"DO YOU WANT TO"
00030 PRINT TAB(10)"1-CREATE A NEW SPRITE"
00035 PRINT TAB(10)"2-EDIT AN EXISTING SPRITE"
00040 PRINT TAB(10)"3-LOAD A SPRITE BY BYTES"
00042 INPUT "ENTER 1,2, OR 3";C
00045 IF C=2 THEN GOSUB 2000
00050 PRINT "(CLEAR)"
00060 PRINT "(CMDR)(A)";;FOR I=1 TO 24:PRINT
"(SHIFT)(*)";:NEXT:PRINT"(CMDR)(S)"
00070 FOR I=1 TO 21:PRINT "(SHIFT)(-)";:FOR J=1 TO 24:PRINT ".";:NEXT J:PRINT
"(SHIFT)(-)":NEXT I
00080 PRINT "(CMDR)(Z)";:FOR I=1 TO 24:PRINT"(SHIFT)(*)";:NEXT:PRINT"(CMDR)(X)"
00083 IF C=2 OR C=3 THEN GOSUB 2500
00085 L=1:C=1
00090 GET A$
00092 H=PEEK(1024+40*L+C)
00095 POKE(1024+40*L+C),91
00098 POKE(1024+40*L+C),H
00100 IF A$="" THEN 90
00110 IF A$="X" THEN X=1:GOTO 640
00120 IF A$="O" THEN X=0:GOTO 650
00130 IF A$=CHR$(17) THEN L=L+1:GOTO 600:REM UP ARROW CURSOR
00140 IF A$=CHR$(29) THEN C=C+1:GOTO 600:REM EAST ARROW CURSOR
00150 IF A$=CHR$(145) THEN L=L-1:GOTO 600:REM DOWN ARROW CURSOR
00160 IF A$=CHR$(157) THEN C=C-1:GOTO 600:REM WEST ARROW CURSOR
00165 IF A$="(SHIFT)(E)" THEN 1000
00170 GOTO 90
00600 IF L>21 THEN L=1
00610 IF C>24 THEN C=1:L=L+1:GOTO 600
00620 IF L<1 THEN L=21
00630 IF C<1 THEN C=24:L=L-1:GOTO 620
00640 IF X=1 THEN POKE(1024+40*L+C),160:REM 160=REVERSE VIDEO SPACE
00650 IF X=0 THEN POKE(1024+40*L+C),46:REM 46=PERIOD
00660 PRINT "(HOME)"
00670 Z$=STR$(L):IF LEN(Z$)<3 THEN Z$=" "+Z$
00680 Y$=STR$(C):IF LEN(Y$)<3 THEN Y$=" "+Y$
00690 PRINT TAB(30)"LINE=";Z$
00700 PRINT TAB(30)"ROW=";Y$
00710 GOTO 90
01000 FOR I=0 TO 20
01015 PRINT "(HOME)ROW=";I
01020 FOR J=0 TO 2
01025 N(3*I+J)=0
01030 FOR K=0 TO 7
01040 R=8*J+K+1:L=I+1
01045 IF PEEK(1024+40*L+R)=160 THEN N(3*I+J)=N(3*I+J)+2^(7-K)
01050 NEXT K
01060 NEXT J
01070 NEXT I
01080 PRINT"(CLEAR)";"ENTER FILE NAME TO SAVE SPRITE DATA"
01090 INPUT F$
01100 OPEN 1,1,1,F$
01110 FOR I=0 TO 63
01140 PRINT#1,N(I),CHR$(13);:REM CHR$(13) ACTS AS DELIMITER
01160 NEXT I
01200 CLOSE 1
01210 END
02000 INPUT "ENTER FILE NAME CONTAINING SPRITE DATA";F$
02010 OPEN 1,1,0,F$
02020 FOR I=1 TO 64:INPUT#1,N(I):NEXT
02025 CLOSE 1
02030 RETURN
02500 FOR L=1 TO 21
02510 FOR J=0 TO 2
02512 Q=N(3*(L-1)+J+1)
02514 IF C=3 THEN PRINT "(HOME)";TAB(30)"BYTE#";3*(L-1)+J+1:PRINT
TAB(30);:INPUT Q
02515 PRINT "(HOME)";TAB(70);"       "
02517 IF Q=0 THEN 2560
02520 FOR I=0 TO 7
02540 IF Q=>2^(7-I) THEN POKE(1024+40*L+8*J+I+1),160:Q=Q-2^(7-I)
02550 NEXT I
02560 NEXT J
02570 NEXT L
02580 RETURN
```

Lines 1000-1200 translate the information in the screen memory into the appropriate numeric data and then store that data on cassette.

Lines 2000-2030 contain the subroutine for extracting existing sprites from a cassette file.

Lines 2500-2580 contain the subroutine for converting sprite data (in terms of bytes) into an enlarged sprite image.

The other program, Listing 3, retrieves the sprite data from the cassette tape and converts it into DATA statements which appear on the screen. Positioning the cursor on the first line of the first DATA statement and pressing RETURN four times adds the DATA statements to whatever program is in the memory. More on that later.

Listing 3. Getsprite Program.

```
00010 PRINT "(CLEAR)":DIM N(64)
00020 INPUT "ENTER FILE NAME OF
      SPRITE";F$
00040 OPEN 1,1,0,F$
00050 FOR I=1 TO 64:INPUT#1, N(I):
      NEXT I
00090 INPUT"BEGINNING LINE NUMBER
      FOR DATA";L
00100 FOR I=0 TO 3
00110 PRINT L+I;"DATA";
00120 FOR J=1 TO 15
00130 N$=STR$(N(16*I+J))
00140 PRINT RIGHT$(N$,LEN(N$)-1);",";
00150 NEXT J:PRINT N(16*(I+1))
00160 NEXT I:CLOSE 1:END
```

Program Operation

The program can be used to create new sprites by drawing an image on the screen with the keyboard and cursor controls. The user starts with a 24 by 21 field of dots (periods) outlined with solid lines. A pseudo cursor is indicated by a flashing + sign. After you move the cursor with the cursor keys, a display appears in the upper righthand corner, showing which row and column you occupy. If you move the cursor off the display field, it reappears on the other side.

Pressing the X key causes the cursor to turn each pixel "on" as it passes over it. Pressing the O key causes the cursor to turn each pixel "off" as it passes. After a few minutes of practice, you will get the hang of it.

When the sprite is complete, press the shift and E keys at the same time to terminate the input portion of the program and to start calculating the bytes from the screen memory. You are asked to supply a file name for the sprite data, and it is stored on tape.

The program also allows you to load a previously created sprite, to modify it, and to store the slightly changed image in a new file. This is particularly useful for animating sprites. Simply erase an arm or a leg and redraw it to create the effect of animation.

A third feature allows you to load a sprite from data that have already been converted to bytes. This is useful if you have a program listing and want to see how the sprite looks without keying and running the program. Sprites loaded by bytes can also be changed.

Once a sprite is created and stored on cassette, how do you get it in your program? This is done with the program Getsprite along with the screen editor on the Commodore 64.

To merge the program with any existing program, clear the screen and type in LOAD "GETSPRITE." The program with which you are merging should not use line numbers below 200. (If necessary, you can renumber Getsprite.) After Getsprite is loaded, type LIST to list the program on the screen. Next, type LOAD "PROGRAM" where PROGRAM is the name of the existing program. The Commodore loads the new program over Getsprite, but when the display returns, the listing of Getsprite will be on the screen. Placing the cursor on the program lines and hitting RETURN adds the Getsprite instructions to the program without re-keying.

To avoid running the Getsprite subprogram when you run the main program, add the line: 5 GOTO XXX where XXX is the first line number of the main program.

To add sprites at any time, type GOTO 10 instead of RUN to start the program. Getsprite clears the screen and asks for a sprite filename and a beginning line number for the DATA statements. Be careful not to use any line number that would overlap a portion of your program. There will be four DATA statements of 16 bytes each, starting with the line number that you specified and incremented by one for each new DATA statement. When the DATA statements are displayed on the screen, position the cursor at the beginning of each line and press RETURN, using the screen editor to add each statement to your program.

Summary

The sprite graphics capability of the Commodore 64 opens a new dimension of animation and real time graphics to the Basic programmer. Even with sprite graphics, Basic is still too slow for complicated, fast action games. However, simpler games and animated graphics for strategic and educational games can challenge the most ambitious programmer for several months. The use of the sprite editing program should make the task of creating and coding sprites a little easier. ☐

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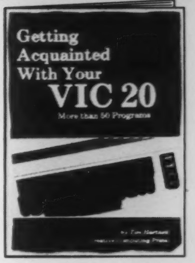

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Susan Glinert-Cole

The greater proportion of my mail in the last few weeks is from readers who were delighted to see someone finally bring the UCSD p-System out of its modest, and undeserved, obscurity. I was equally pleased to receive them, since a friend of mine, whose charm is only slightly inferior to my own, remarked that IBM PC owners just don't use the p-System. It gave me great pleasure to see that, once in a very long while, he does mispeak.

I had planned to include something in every "Images" about it, but there are so many other items which get in the queue that this may not always happen. It didn't happen this month, but next month may, if I stay on top of the piles on my floor, delight the hearts of the letter writers, as I have some information on 8087 support and the p-System. This month's colmn is about books, assembly language, and Basic.

Two Books

The fine, detailed books on the IBM PC are beginning to appear in quantity. I bought two of them this month: *IBM PC Assembly Language* by Leo Scanlon and *Inside the IBM PC—Access to Advanced Features and Programming* by Peter Norton; both are published by Robert J. Brady Co. The former is very good and the latter outstanding; both books read quite pleasantly and contain a great deal of information which hitherto had to be painfully extracted from technical manuals. One rainy Sunday afternoon I managed the first third of both books (I am a fast reader), and emerged at dinnertime without feeling particularly confused.

Like the other works of Peter Norton (the *Norton Utilities*, for example), his book on the IBM PC is a superior and classic production. It is possible, for $60, to order a set of three disks which complement the text, but not having them does not lessen the benefit which can be derived from the book.

He assumes a basic knowledge of the IBM PC as well as some programming experience, so be forewarned: this is not a book for rank beginners. It is aimed at those who are curious enough to go beyond the introductory stages of computing and find out how to get around inside the machine to make it do strange and wonderful things.

The chapters cover the disk operating system (DOS), disk storage, ROM, video and keyboard access with some fascinating asides on Pascal, assembler and warbling. Many of the programs described are written in Pascal (hooray!); it is nice to see some really useful programs written in this language for a change. There is, however, ample coverage of the topics described in Basic as well. In fact, the juxtaposition of the programs makes it easy to compare the style and content of the two languages.

There are also several assembler subroutines with detailed instructions for incorporating them in your main Pascal or Basic program. I highly recommend this book for even the advanced beginner. Most of the topics are easily within the grasp of someone with just rudimentary programming experience, and are so thoroughly and clearly explained that the reader will soon discover that he is suddenly moderately experienced with only a modicum of effort.

Assembly language, or the Art of Programming with a Pair of Tweezers, is always difficult to present in a cozy manner. The problem is that there are so many new concepts to introduce before the issue of programming can be addressed that the reader tends to become overwhelmed by explanations of registers, stacks, and memory segmentaton. There is such a myriad of details to be attended to that a good deal of patience (among other attributes) is required to produce a competent assembly language programmer.

Advocates of Assemblers (AA for short) enthusiastically impress upon the unwary the power that assembly language gives a programmer over the machine. Admittedly, it is powerful and allows some elegant and clever manipulations which are not possible from a high level language and is thus appealing to many people.

Those of you who enjoy or feel impelled to worry a lot will find that assembly language gives you an opportunity to worry about details you never dreamed existed outside of an IRS audit. You will have an opportunity to chew your fingernails in any base from 2 to 16 by judicious use of the RADIX pseudo-op. You can nibble your lip over segmentation and 24 (count 'em) operand addressing modes.

If that still doesn't satisfy you, you can eat your way through a box of orange flavored antacid tablets trying to decide which of the 30 or so jump instructions best suits your mood. Assembler is not for amateur worriers.

I confess that, after one semester of IBM 360/370 assembler and 45 boxes of antacid tablets (assorted flavors), the lifestyle simply didn't appeal to me. I grudgingly admit, however, that there are times when assembler is indispensable for getting a job done efficiently. Anyway, if this sounds like something you might enjoy, Leo Scanlon's book will be of use to you.

Parts of this book are likely to be confusing to someone who has never done any assembly language coding before. The examples often clarify what the text leaves obsure, but I think that this book will probably best benefit someone with some prior experience in this area. As with the Norton book, you may order a disk which contains programs mentioned in the text and in this case, I strongly suggest that you do so.

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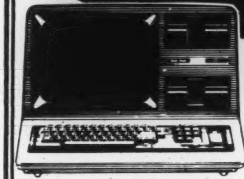

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Since this is the first book I have seen which deals in particular with the IBM PC Macro Assembler, it is worth buying just for the specific information which can be found in it. Like many programming languages, assembler is difficult to learn from a book, and it really requires the IBM Macro Assembler and some hours at the keyboard to become comprehensible.

The book does an excellent job of explaining the 8088 instruction set and higher precision mathematical operations and covers input/output and system resources clearly. The book contains only a few ready-to-type-in programs, but there are quite a few procedures around which a program could be built. One of these subroutines contains the complete data table for "Turkey in the Straw." The complaint I have is with the first chapter, which does an inadequate presentation of the function of an assembler and the very important distinction between assembly time and execution time. I therefore digress for a while to fill in these gaps, for those of you who have raced out to the drugstore in anticipation of an evening with the Macro Assembler.

The Macro Assembler

First of all, recall that computer memory is organized into a series of consecutive locations, each of which has its own, unique address. Each location stores one byte of information, which is why a byte is sometimes called the smallest addressable unit.

Bytes of information are accessed by specifying the memory address at which the information resides. In higher level languages, such as Basic, the user may remain unaware and unconcerned about addressing, since lower level computer functions take care of the details involved in assigning symbolic labels, such as variable names, to memory locations. For example, the instruction

```
ANSWER=42
```

assigns the value 42 to the variable ANSWER. A memory location is assigned to the label ANSWER and the value 42 is placed there. When the instruction

```
PRINT ANSWER
```

is encountered, the address of ANSWER is looked up in a table and the value at that location is fetched. "Where is it fetched to (from?)," I hear someone saying out there. Aha. The worrying begins.

The central processing unit (CPU) contains certain workspaces, called registers, where many types of data manipulation take place. Again, programmers who use high level languages never need be aware that these things exist, but registers are indispensable in assembly language.

The number of registers, as well as the amount of information they may contain, varies from computer to computer. The IBM 360 has 16 general purpose registers, each of which can contain 32 bits or four bytes. The number of bits that a computer normally handles in a register is called a word; the 360 has a 32-bit word size. Computers may also use double words, which are needed for some types of arithmetic, as well as byte-sized pieces of data.

The IBM PC has a complicated register structure and a debatable word size. There are four 16-bit data registers, but these can also be subdivided and used as eight 8-bit registers. Not even Intel, the designer of the 8088 chip, is sure whether the 8088 has an 8- or a 16-bit word size.

Intel's *iAPX 88 Book*, which is a must for 8088 Assembly language programmers, has a section headed "The 8088's Powerful 16-Bit Instruction Set." The first line reads "The 8088 has the most powerful instructions of any 8-bit microprocessor." In fact, the PC is a 16-bit machine inside, but it only communicates 8-bits at a time to the outside world. The compromise "8/16 bit microprocessor" designation is commonly used for the 8088; I think they ought to take the middle course and just call it a 12-bit machine. (Are you beginning to worry about some of these things? You're off to a flying start.)

Arithmetic, to name just one type of instruction, is carried out inside the registers. The Basic instruction

```
ANSWER = 17 + 12
```

in generalized assembly language appears in Listing 1. MOVE and ADD are examples of mnemonic op codes. The next column contains the operands. In general, the first operand is where the result is left and the second operand contains a value which the op-code manipulates. The first column of the program may contain an optional symbolic label or marker which is used as a location reference for branch instructions. More about this later.

An assembler is a program, just like the word processor or the Space Potatoes game that you maneuver with such finesse. Its function is to take the program you have written (in what AAs wittily refer to as "meaningful mnemonics") and convert your deathless code into something the computer can understand. In computerese, the assembler takes your source code and translates it to object code. This translation process is called "assembling."

It is possible (and often necessary) for the programmer to instruct the assembler to do certain things, like reserve space for data and assemble blocks of code only under certain conditions. The instructions the programmer gives to the assembler are called pseudo-op codes, to distinguish them from op-codes, which are instructions to the central processing unit. Pseudo-ops are executed when the assembler is running; op-codes are executed when your object code program is running.

In general, the assembler fetches a line of your source code and translates it to machine code, fetches the next line of your program and translates it, and so on until it finds an END instruction. At this point there lie on your disk two programs: your source code and the object code program which the assembler has so carefully put together. You must then bind in any other pieces of software, such as trigonometric functions and previously assembled code modules, which will be needed by the program.

Listing 1.

```
MOV     AX,17           ;PUT 17 INTO REGISTER AX
ADD     AX,12           ;ADD 12 TO CONTENTS OF AX
MOV     ANSWER,AX       ;STORE AX INTO ANSWER
```

Listing 2.

```
HEARTBURN              SEGMENT
START_HERE             OP      PEPPERONI,2     ;ORDER PIZZA
                       MOV     AX,42           ;INITIALIZE AX
                       MOV     BX,PUMPKINS     ;INITIALIZE BX
                       ADD     AX,BANANAS      ;ADD FRUIT
                       CDB     AX,BX           ;COMPARE
                       JFD     TASMANIA,1      ;JUMP IF ZER0
                       CRN     AX,BX           ;ELSE CONVERT TO ROMAN
                       EP      4               ;AND EAT PIZZA
TASMANIA               EPI                     ;REMOVE PROGRAMMER
                       MOV     FRIDGE,BANANAS  ;SAVE FRUIT
;                ....  STORAGE AREA  ....
PUMPKINS               DW      542             ;BITES/PUMPKIN
BANANAS                DB      12              ;BITES/BANANA
FRIDGE                 DB                      ;FRIDGE SPACE
END                    HEARTBURN
```

This process is called linking. A linker may also perform many other necessary functions, not the least of which are to resolve certain address discrepancies and produce an executable piece of software (called a load module). We will leave linkers for an advanced lesson sometime in the future and return to the subject of the moment.

Let us look at a perfectly imaginary assembler at work on an equally mythical assembly program. In Listing 2 are a few lines of meaningful mnemonics.

This program is written in no particular assembly language (you may have already jumped to that conclusion), but will prove (I hope) instructive nevertheless. The principles described are applicable to any assembler. Listing 3 describes the instruction associated with the mnemonic code, the op code assigned to the mnemonic, the size of the instruction in bytes, and the required operands.

The IBM Macro Assembler is said to be "relocatable" because it generates an object code module which may be placed in any available area of memory when it is loaded. In this case, the actual memory locations are unknown at assembly time. The assembler will assume that the program begins at address 00000 and performs all address calculations based on this starting address.

First, the assembler calculates the addresses of all symbolic labels in your program and places them in a symbol table. Second, the machine code instructions themselves are generated, using the locations computed in the first pass. An assembled source code listing for the above program might look something like Listing 4.

Line 1 generated no object code as it is merely an instruction to the assembler that this particular program segment is named HEARTBURN. Line 2 is the first actual program line. The assembler sets a location counter to 00000, and this address is assigned to the first instruction. The assembler consults an op code table and finds that the OP mnemonic has the machine code 14, two operands are needed, and the total length of the instruction is two bytes. The first byte of the assembled instruction is 14, the op code specification.

By consulting another internal table it sees that PEPPERONI is pizza type number 6. This becomes the first nibble of the second byte in the assembled code line. The second operand specifies the number of pizzas required, and the assembler puts this figure into the second nibble of the instruction. The location counter is updated by the length of the instruction (two bytes), and the assembler moves to the next line.

The op code is put into place in the same way; the first nibble of the second byte gets the register specification (A) and the last three nibbles encode the number 42 in hexadecimal. Since this instruction is three bytes long, the next line begins at location 00005.

When the fourth line is assembled, the assembler encodes the location of the storage area PUMPKINS into the last five nibbles. Similarly, in line 7, notice that the location of the symbolic label, TASMANIA, is put into nibbles 3 thru 7.

Lines 13 to 16 are instructions for reserving storage space. The assembler puts aside one word of memory space (two bytes) for PUMPKINS and defines this address to contain the value 542 (21E in hex). A byte of memory containing a value of 12 is assigned to BANANAS, and a byte is reserved for FRIDGE, but nothing is placed there until the program is actually executed. When the instruction END is encountered, the assembler halts.

The progammer now does the linking and loading step. The actual memory locations of the program, and any references to external modules which may be used by the program, are reconciled at this time. Having gone to all this trouble to assemble it, let's run through an execution.

Line 2 commands the computer to order two pepperoni pizzas. We will not go into the details of this op code. Line 3 puts the value 42 into the AX register. Line 4 puts the value at PUMPKINS, 542, into the BX register. Line 5 adds the value at BANANAS to whatever is in the AX register, so AX now contains 42 + 12 = 54.

Line 6 compares register BX to AX (dribbling some bits in the process). The second operand (BX) is greater than the first (AX); a flag is set elsewhere in the computer to indicate the result of the comparison. The jump instruction in the next line checks the flag and jumps only if AX is greater than BX. Since it isn't, no jump takes place, and the disk in drive 1 is left unfolded.

In line 8 the contents of the second register are converted to Roman numerals and placed into the AX register for future use. The computer consumes a pizza in line 9 and then executes the programmer in line 10. The last executable instruction on line 11 places the value at BANANAS into the reserved storage at FRIDGE.

Listing 3.

OP CODE	OPERANDS	SIZE IN BYTES	MACHINE CODE	OPERATION
OP	TYPE, NUMBER	2	14	ORDER PIZZA
MOVI	REGISTER, IMMEDIATE BYTE	3	6A	MOVE IMMEDIATE BYTE
MOV	REGISTER, MEMORY BYTE	4	31	MOVE BYTE
MOV	MEMORY BYTE, MEMORY BYTE	6	4A	MOVE BYTE
ADD	REGISTER, MEMORY BYTE	4	04	ADD BYTE
CDB	REGISTER, REGISTER	2	11	COMPARE AND DROP BITS
JFD	LOCATION, DISK DRIVE	4	C3	JUMP AND FOLD DISK
CRN	REGISTER, REGISTER	2	22	CONVERT TO ROMAN NUMERALS
EP	none	1	01	EAT PIZZA
EPI	none	1	7D	EXECUTE PROGRAMMER IMMEDIATE

Listing 4.

```
 LINE #  LOCATION    OBJ CODE              SOURCE CODE

   1                                  HEARTBURN   SEGMENT
   2      00000      14  62           START_HERE  OP      PEPPERONI,2
   3      00002      6A A 02A                     MOVI    AX,42
   4      00005      31 B 0001D                   MOV     BX,PUMPKINS
   5      00009      04 A 0001F                   ADD     AX,BANANAS
   6      0000D      11 A B                       CDB     AX,BX
   7      0000F      C3 00016 1                   JFD     TASMANIA,1
   8      00013      22 A B                       CRN     AX,BX
   9      00015      01                           EP
  10      00016      7D               TASMANIA    EPI
  11      00017      4A 00020 0001F               MOV     FRIDGE,BANA
  12                                   ;   ...STORAGE AREA...
  13      0001D      021E             PUMPKINS    DW      542
  14      0001F      C                BANANAS     DB      12
  15      00020                       FRIDGE      DB
  16                                  END         HEARTBURN
```

Two Books on Basic

For the less intrepid who are casting about for an easy way to learn Basic, two excellent choices have appeared on the market. They were field tested for me by two people with no programming experience and were found to be enjoyable, educational, and well engineered.

The Basic Primer by Marilyn Davis, published by IBM, is a software package in the IBM Personal Computer Educational Series. It is designed to be a book on a disk and it keeps some of the airs and graces of a book about it—like page numbers and an index. The medium of course, makes it more than just a book; it is really a series of interactive lessons, or pages, which take the user from the very simple to the moderately difficult concepts of the Basic language. The graphic screens are beautifully done and make excellent use of color (if you have it available).

Error recovery, as one should expect in a package designed for beginners, is also excellent. The field tester got confused a couple of times and wailed for assistance, but I steadfastly pretended to be absorbed in counting the leaves on a begonia, and he eventually got back on track himself.

Because of its interactive nature, the package can stand pretty much by itself. The set-up instructions are quite clear about making a backup copy in the true IBM format. It would be equally enjoyable for children and adults, as the user can set the pace for advancement, but it is interesting enough to hold the attention of an adult. Be warned: the music lessons appear early on in the tutorial, so prepare yourself for an evening of beeps and atonal tone poems.

The drawback to on-screen tutorials of the *Basic Primer* type is that to a certain extent, you have to follow the lesson plan. Some people would rather learn concepts in a less prescribed manner. *A Guide to Programming the IBM Personal Computer* by Bruce Presley, published by Van Nostrand Reinhold, is one of the best books of its type I have seen. I lent another Basic book to a friend who had just bought a PC, and he gave up on it after a few pages. I had used that particular book myself, and we had the same feeling about it: it kept telling you to do things, but it never explained why you were doing them.

Presley's book overcomes this objection quite well. His presentation is very clear and is augmented by copious examples and problems (with the answers in the back). The book is well laid out graphically with large type and generous spaces on the page which makes it easy to read from a distance. It is pretty dry reading; this is not one of the chatty or humorous computer texts.

I have noticed, and Presley's book is a good example, that nobody numbers pages in computer books from start to finish anymore. The fashion these days is to number each chapter separately and then have a little retinue of appendices, all with their own page numbers, trotting after the main text. When I want to find out how many pages there are in a book, I don't want to have to get a calculator and add up all the separate section numbers. I am beginning to suspect that word processors can't count past 32. ☐

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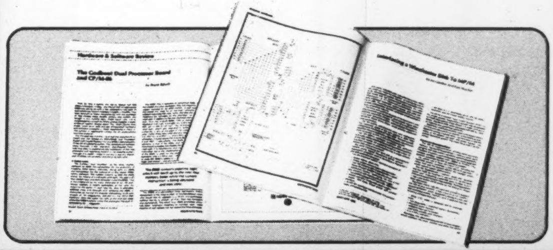

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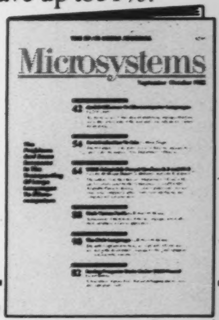

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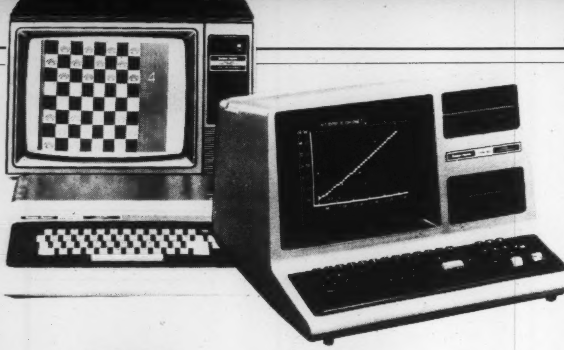


rings...trs-80 strings...trs-8

Stephen B. Gray

On the fifty-fifth lap around the TRS-80 track, we check out the Model 4 (which replaces the Model III), five ways to store your floppy disks, the *Superkeys* program from Sams, a keyboard shield for your Model III, and another short program that creates graphics from the keyboard.

Something new: To help reduce clutter, company addresses are now at the end of the column, which also makes it easier for the magazine to add "Circle XXX on Reader Service Card," as necessary.

TRS-80 Model 4

For those who expected the TRS-80 replacement for the Model III to be radically different, the Model 4 must have been a disappointment when it was introduced recently because it looks very much like a III and is compatible with it (Figure 1).

However, the Model 4 has features that many TRS-80 fans heartily welcomed: of greatest interest is the fact that the 4 can run CP/M-Plus programs, thereby making available thousands of additional programs.

By using slightly smaller characters, the Model 4 displays 24 lines of 80 characters each compared with 16 lines of 64 characters each on the III. The minimum RAM memory is 64K, expandable to 128K, and the Model 4 runs at 4 MHz instead of 2.03 MHz.

A unique MemDisk feature lets you turn some of the internal RAM memory of the Model 4 into a pseudo-floppy drive that responds "keystroke-quick" rather than at the slower disk-access speed. You can COPY, BACKUP, PURGE, and display the DIRectory of MemDisk files.

The Model 4 closely resembles the Model III, except that some of the keys are white; there are three function keys in the numeric keypad, a CAPS key on the keyboard, and the case is made of molded cream-color plastic instead of opaque plastic with a sprayed-on aluminum finish that can be rubbed off.

The 4 comes in two 24-line disk models: with 64K and one disk, $1699; with 64K, two disks, and RS-232C, $1999. A 16K cassette-based starter system, displaying 16 lines of print, running Model III Basic, and without disk drives, is $999. The internal RAM memory of the disk models can be expanded to 128K with a 64K RAM kit for $149.

The disk models can read the microcassettes of the new portable Model 100 as well as write files on them. A SPOOL feature permits the Model 4 to perform other operations while printing data.

Although the first editions of the Model 4 manual omit it, a SOUND statement, much like the one in the Color Computer, provides variable pitch and duration. Since it has only a single octave, it is meant to be a "business alert," to signal an operator.

The Model 4 runs all the Model III software, providing a 16-line display. When the Model 4 TRSDOS 6.0 is booted up, the 24-line display is used.

A Model 4 Upgrade Kit ($799 plus installation) converts a Model III to a Model 4, except for the cabinet, disk drives, and CRT. It includes a new keyboard, CPU board, 64K RAM, sound, TRSDOS, and Disk Basic.

A review of the new TRS-80 Model 4 computer will appear in these pages soon; one was just delivered to me.

Storing Your Floppy Disks

Where do you keep your floppy disks

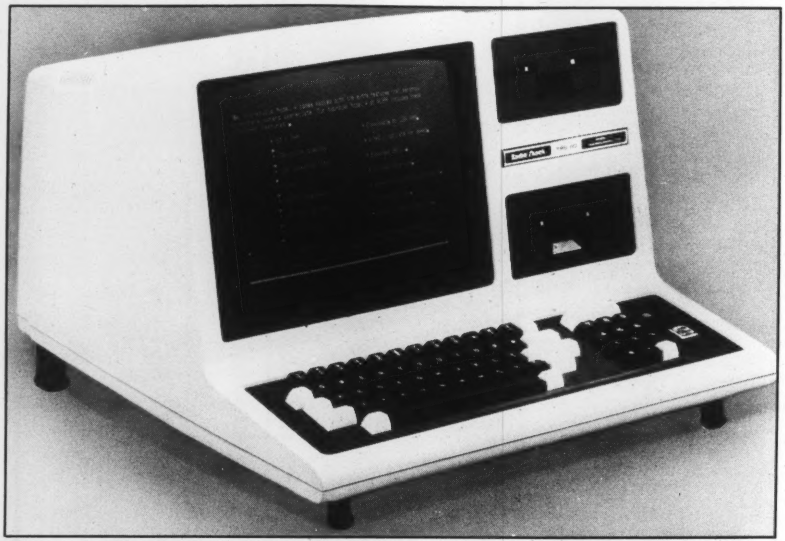
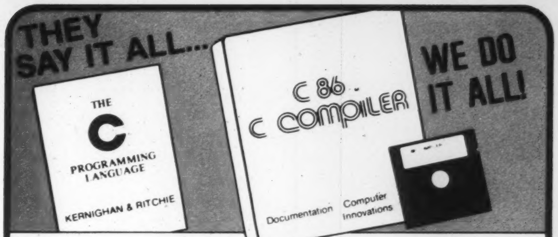


Figure 1. The TRS-80 Model 4 runs CP/M programs as well as Model III programs, and its cream color is molded into the case.



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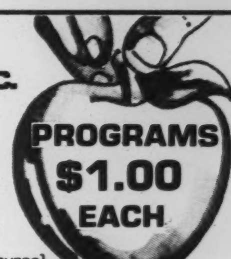

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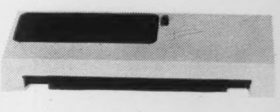

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when you are not using them? In a pile next to your computer? Thrown into a drawer? In the cardboard box in which you purchased them?

If your computer area is clean and there are no children or pets in your house or apartment, you may have no problems. But there are better ways to keep your floppies clean, safe, and handy. These better ways all help you follow the advice of the Model III Disk System manual: "Store diskettes in a vertical file folder on a shelf where they are protected from pressure to their sides (just as phono records are stored)."

You have a choice between a compact storage box that holds ten disks, a large file box that holds 50, two types of plastic disk-storage envelopes that fit in a three-ring binder, and handy 20-disk "flip files" in permanent binders.

Disk Storage Boxes

Radio Shack has discontinued the two previous plastic storage boxes for floppies: catalog number 26-1452 for the 5¼" disk; 26-4952 for the 8" disk. There was a problem with splitting at the seams, a Computer Center manager told me. These discontinued boxes have been selling at half price, although none were to be found when I checked three New York centers, recently.

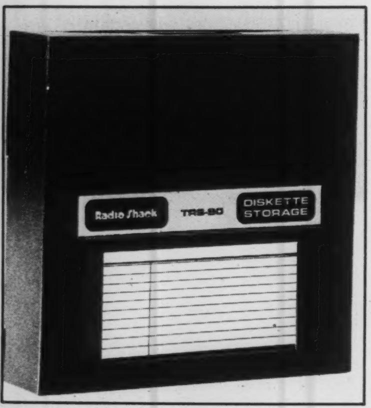


Figure 2. The disk storage box stores ten floppies; its index is visible whether the box is open or closed.

The new model alleviates the splitting problem with a thicker polystyrene plastic and a sturdier design (Figure 2). The two plastic "tongues" in the front of the older case have been replaced with a solid pop-out easel front that swings forward to allow easy access to the disks, so you can flip through them.

The new 5¼" storage box, catalog number 26-1321, is $4.95; the 8" box, 26-4956, is $5.95. These boxes hold up to ten floppies each.

Large File Boxes

If you have more than ten disks to store, the file boxes hold up to 50 floppies each (Figure 3). They are quite simple to use; just flip back the hinged transparent lid, and the five movable index dividers inside provide six locations for keeping your floppies separate by category.

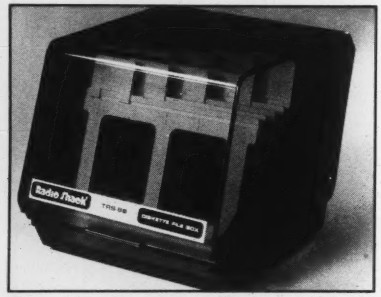


Figure 3. The large file box holds 50 floppies and is easy to use; just flip open the top.

The 5-¼" file box, 26-1453, is $29.95; the 8" file box, 26-4953, is $39.95.

Disk Envelopes

If you prefer to store your disks in a binder, perhaps to match your library of TRS-80 binders, there is a $5.95 universal three-ring binder, 26-1310, which looks like the regular software binders and holds disk envelopes, made of sturdy flexible, transparent plastic (Figure 4).

The envelope for 5¼" floppies, 26-510, holds two of the floppies and costs $7.95 for ten envelopes. The envelope for 8" floppies, 26-4907, holds one disk, and is also $7.95 for ten envelopes. Both envelopes have space for a label for recording the contents of the disk or whatever information you wish to record.

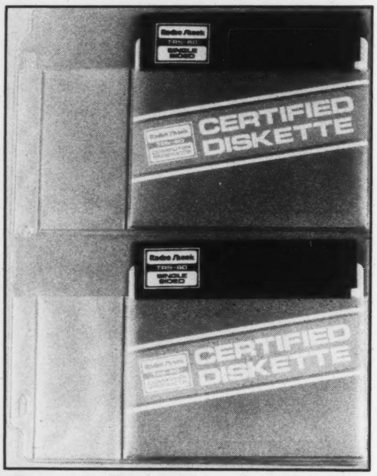


Figure 4. The disk envelope for 5¼" floppies holds two and has space for a label or other data.

These envelopes, by the way, are the same as the envelopes in which disks are stored as part of TRS-80 software packages.

Disk Looseleaf Files

There is another model of looseleaf disk file, which also fits the Universal Data Binder and costs a trifle more per disk than a disk envelope.

The "housing frame" for 5¼" disks (70-514, package of four, $14.95) consists of two white plastic extrusions at the left and right sides of wide blue plastic pockets that hold eight floppies—four per side of the frame (Figure 5). However, the pockets are so wide that if you turn the frame upside down, the floppies easily slide out, so don't buy this one if you are careless with binders.

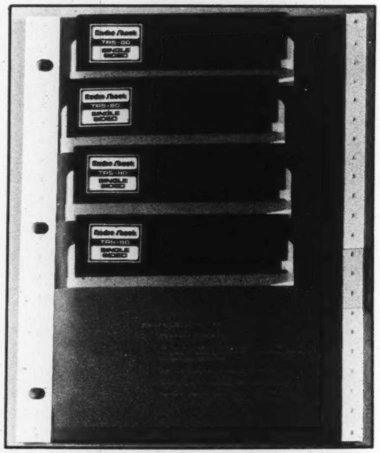


Figure 5. The housing frame for the 5¼" disk holds eight floppies, four on each side.

The looseleaf file for the 8" disk (70-513, ten for $12) is similar to the 26-4907 disk envelope, but holds two disks (one on each side) in addition to the index card and is made of opaque flexible plastic. In fact, a 70-513 is a double-sided opaque 26-4907.

Flip Files

There is yet another way of protecting your disks—by using "flip files," binders with permanent pages, which sit on a shelf when closed, but when open, "display a disk at a time," according to the RSC-9 catalog (Figure 6).

That is, the pages that hold the disks are fanned out, so you can see up to ten disk labels at a time. Each "page" is a plastic pocket with a fixed cardboard di-

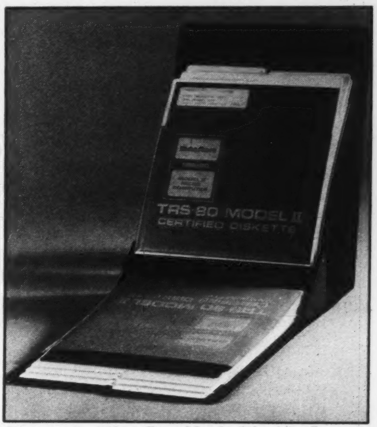


Figure 6. The flip file holds 20 floppies and displays ten labels at a time; to see the other ten, flip over all the pages.

vider, so a disk slides into each side. You affix the labels to the outer ends of the dividers.

Ten pages hold 20 floppies; 40 pregummed labels are supplied. Ten labels are visible from one side; just flip over the stack of pages to see the other ten labels. The plastic pockets are open-ended, but hold the floppies securely to keep them from falling out.

A pocket on the spine of the binder holds a card with 20 spaces for listing the flip-file contents. Flip files are $39.95 for 8″ (70-502), $34.95 for 5¼″ (70-503).

Storage Cost Comparisons

Table 1 shows the various storage systems for 5¼″ floppies, their catalog numbers, and the cost of storing a single floppy disk in each, assuming that you use the full capacity of each.

You should also consider the convenience of storage, of course. The file box is fastest to use; just flip up the lid. But the file box takes up more space on a desktop or shelf than the others.

The others require taking a binder or storage box or flip file from a shelf and opening it. Of the last three, the flip file is probably the fastest to use; it is also the most expensive.

Table 2 is similar, except that it shows the cost per floppy of storing 8″ disks.

Storage for 5-1/4″ Floppies
(Cost per disk)

Disk envelope	26-510	$0.398
Looseleaf file	70-514	0.467
Storage box	26-1321	0.495
Large file box	26-1453	0.599
Flip file	70-503	1.748

Table 1.

Price Comparisons

Incidentally, the prices of Radio Shack's data storage media usually compare favorably with similar products available elsewhere. Similar flip files are $36.30 for 5¼″ disks, $42.90 for 8″ disks, from Uarco Computer Supplies. Although Uarco's large file box looks identical to the Radio Shack offering, it stores up to 60 disks and costs $37.65 for 5¼″; $42.40 for 8″ floppies.

If you have many floppies to store, you might check the other storage items in the Uarco catalog, as well as those in the catalogs of companies such as Devoke Data Products, Challenge Computer Supplies, and Inmac. All four catalogs also feature a wide variety of other DP products, from cables to furniture.

One difference: If you buy a disk-storage item at a Radio Shack store, you can use it immediately. If you buy from a catalog, however, you pay postage for shipping and must wait for delivery.

Superkeys From Sams

The previous column described the *Master Directory* III program from Howard W. Sams & Co. and promised to look at other Sams programs later. Let's look at one more now: *Superkeys.*

The *Superkeys* machine language program, for a Model III or 4 with at least one disk drive, allows you to use a single key to input any DOS command, Basic keyword, or an entire Basic program line.

When you run *Superkeys,* you find that if you press SHIFT and the down-arrow and then press any alphabet key, @, or the right-arrow key, the screen displays a Basic keyword or a system command. If you do a great deal of programming, these 28 pre-programmed keys can speed up your work considerably.

You can easily remember eleven of the 28 keys because they are the first letter of the pre-programmed keyword, such as R for RETURN, T for THEN, and M for MID$(. The rest are harder to remember: W for RND(, A for STRING$(, H for RIGHT$(, etc.

Any of the 28 can be changed by simply putting the program in Define Mode. Keys may be programmed to enter often used Basic words, variable names, even entire lines (up to 255 characters long) into programs. Keys may also be programmed to start various functions, such as RUN, LIST, or EDIT, with a single keystroke.

Storage for 8″ Floppies
(Cost per disk)

Storage box	26-4956	$0.595
Looseleaf file	70-513	0.60
Disk envelope	26-4907	0.795
Large file box	26-4953	0.80
Flip file	70-502	1.998

Table 2.

Once you have redefined several keys, you can save your own set of *Superkeys* definitions to disk with a few simple steps.

Superkeys also includes a Basic screen editor. The brief 10-page manual calls it a line editor, but it is not. Your TRS-80 already has a line editor with which you edit a line by using any of a dozen special editing commands (such as L, X, I, and A), hit ENTER to record all the changes you have made on that line, then edit another line.

The *Superkeys* screen editor permits you to move a cursor anywhere within a displayed Basic program and edit it very simply by typing over the characters you wish to change. To delete a character, press CLEAR, which also moves the rest of the line one character to the left. To insert a blank, press BREAK. After you have made all your changes in the program, press ENTER, and the edited program is entered into memory.

In addition, you can use the screen editor to enter graphics characters into strings or PRINT lines, for compact high-speed graphics. Write a program like the one in the manual, that puts graphics blocks on the screen, then use it to create whatever graphics you wish. With the screen editor, put quotes around each horizontal line of graphics and assign a string name to the line. Or put a PRINT before the quotes and add a line number at the beginning of the line.

That is what the manual says to do, but it won't work unless you follow this order exactly: Create a line of graphics; hit ENTER; hit BREAK; do a SHIFT/BREAK to get into screen-editor mode; put quotes on each end of the graphics line; add a line number along with a string name or PRINT; hit ENTER again; and the next time you LIST, the graphics will show up within the program line.

For $49.95, you can save a great deal of time when you are writing programs by using a single key to put entire words or phrases onto the screen. Also, the *Superkeys* screen editor is much faster to use than the Basic line editor, and it provides a fast way to create graphics.

If you can't find *Superkeys* at a local computer store, you can order it from Sams for an additional $2 charge per order for handling.

Keyboard Shield

Speaking of rubbing off aluminum finish: if you have used a Model III for a while, you have probably worn off the paint on the keyboard-surround in the two places where your hands rest on the case, on the forward edge, unless you have been very careful.

Priced at $9.95, Radio Shack's new product, the Model III Keyboard Shield, is an 18″ piece of curved plastic that protects the front edge of the keyboard.

The shield has a "built-in attachment tape" that allows you just to push it into place. The shield is laminated, with plastic over the aluminum finish, so the color won't wear off.

Short Program #42: Keyboard Graphics II

The short program at the end of the December 1982 column (p. 415) put graphics characters on the screen from the keyboard. But it requires some finagling to generate all 63 characters and was included to see whether any readers could write a straightforward program to do the job.

The first to discover a solution was Richard Fink of Andover, MA, who writes: "Short program #34 intrigued me enough to write another (and better) version. I was curious as to what the ASCII value of a SHIFT 0 and a SHIFT @ were, so I wrote lines 300-450.

"I was surprised to find that on a Model I, Level II a shift/alpha gives the lowercase ASCII value of the alpha key. I had always assumed that the shift key was not wired into most of the keys. I wrote a similar program for an Apple II in which a shift/alpha has the same ASCII value as a non-shift/alpha."

```
 10 CLS
 20 PRINT "PRESS ANY KEY TO START"
 30 C$=INKEY$: IF C$="" THEN 30
 40 CLS
 50 B$=INKEY$: IF B$="" THEN 50
 60 IF B$=CHR$(24) THEN END
 80 IF ASC(B$)<=10 THEN B=ASC(B$)
    + 121 ELSE B=ASC(B$) + 100
 90 PRINT CHR$(B); " ";
100 C=C+1: IF C=30 THEN PRINT: C=0
110 GOTO 50
300 8$=INKEY$: IF B$="" THEN 300
400 PRINT ASC(B$); " = "; B$
450 GOTO 300
```

"By running line 300, you will see that one can generate 94 different ASCII values from the keyboard (95 if you include the break key), more than enough to get 63 graphic characters."

Two PRINT lines which were omitted from the program to simplify it can be reinserted at the end of line 10: "The three lowest graphic characters are obtained by pressing the left, right and down arrow-keys" and "shift/left-arrow ends program."

Line 60 ends the program if you press the SHIFT and left-arrow keys, because ASCII code 24 is for the backspace function. The first half of line 80 (before ELSE) is designed solely to display graphics when the left, right, or down arrow key is pressed. The functions for those three keys have ASCII values of less than ten, so 121 is added to bring the total up to 128, 129, and 130, respectively. The right half of line 80 takes care of the other 61 graphics characters (whose ASCII values are all over 30), adding 100 to each to provide graphics codes 131 through 191.

To see this more clearly, add:

85 PRINT B$; B; ASC(B$);

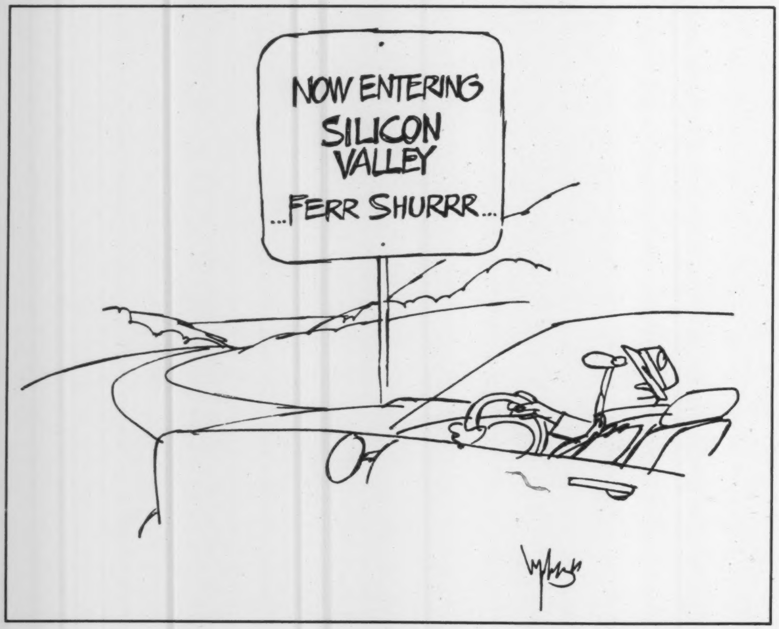
which will print the keyboard character, its ASCII value, and its corresponding graphics character code immediately before each graphics character.

Line 100 makes for a clearer display, notes Richard. It allows 30 characters to be displayed on a line, then starts a new line. The last part of program line 90 puts a space after each graphics character.

Remove the last part of line 90, and you delete the spaces. Now you have a program that allows you to create graphics directly from the keyboard. A simple chart showing which key corresponds to which graphics character is all you need. (Several personal computers have the graphics characters engraved on the keys.)

Without the last part of line 90, the program displays graphics characters across half the screen width. Change the value of C in line 100 for a wider graphics display up to a maximum of 63.

Incidentally, this is the perfect program to use with the *Superkeys* screen editor to enter graphics characters into strings or PRINT lines. The sample program in the *Superkeys* manual creates only two different graphics characters, so you would need an additional program line for each additional character you wish to put into your graphics. Richard's program solves the problem by creating all 63 graphics characters with the fewest number of lines. ☐



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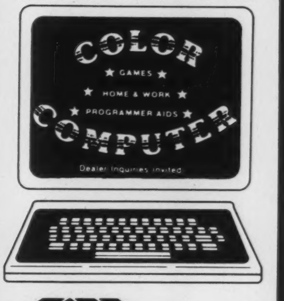

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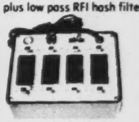

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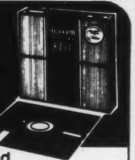

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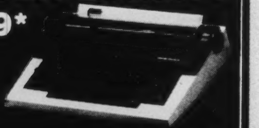

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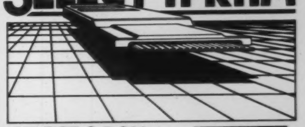

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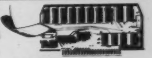

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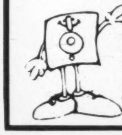

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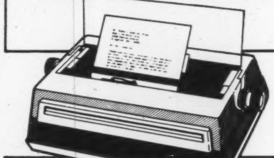

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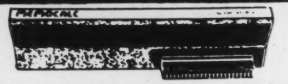

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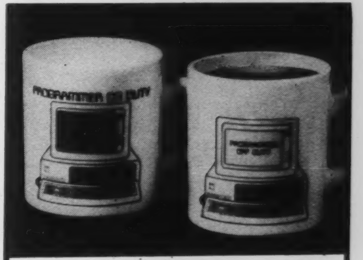

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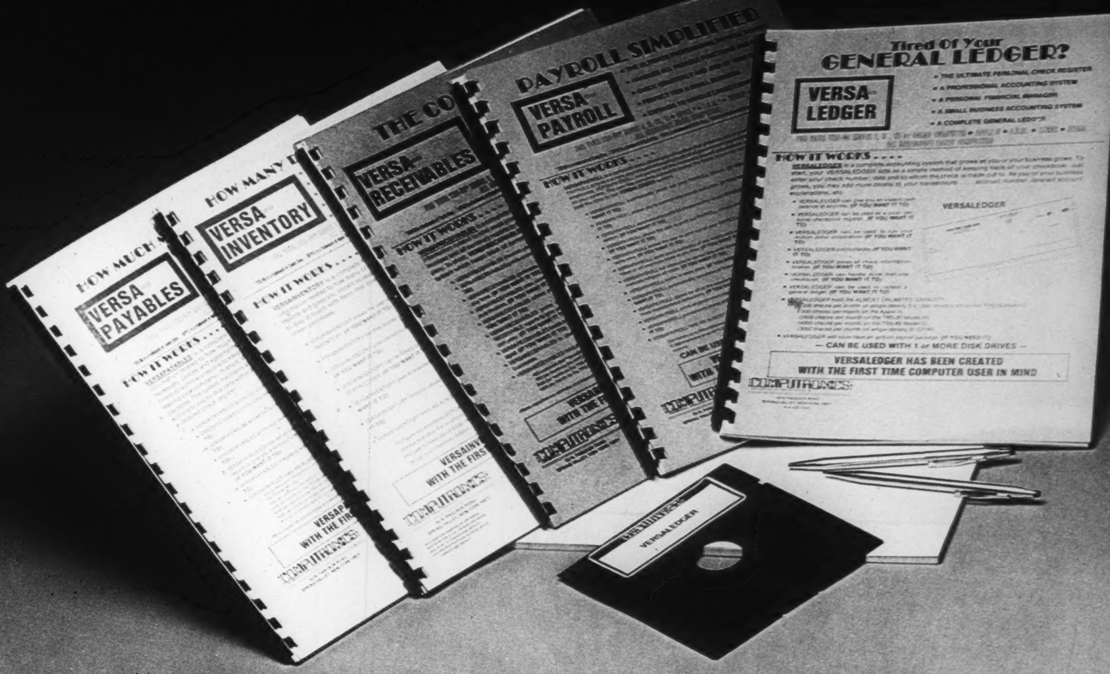

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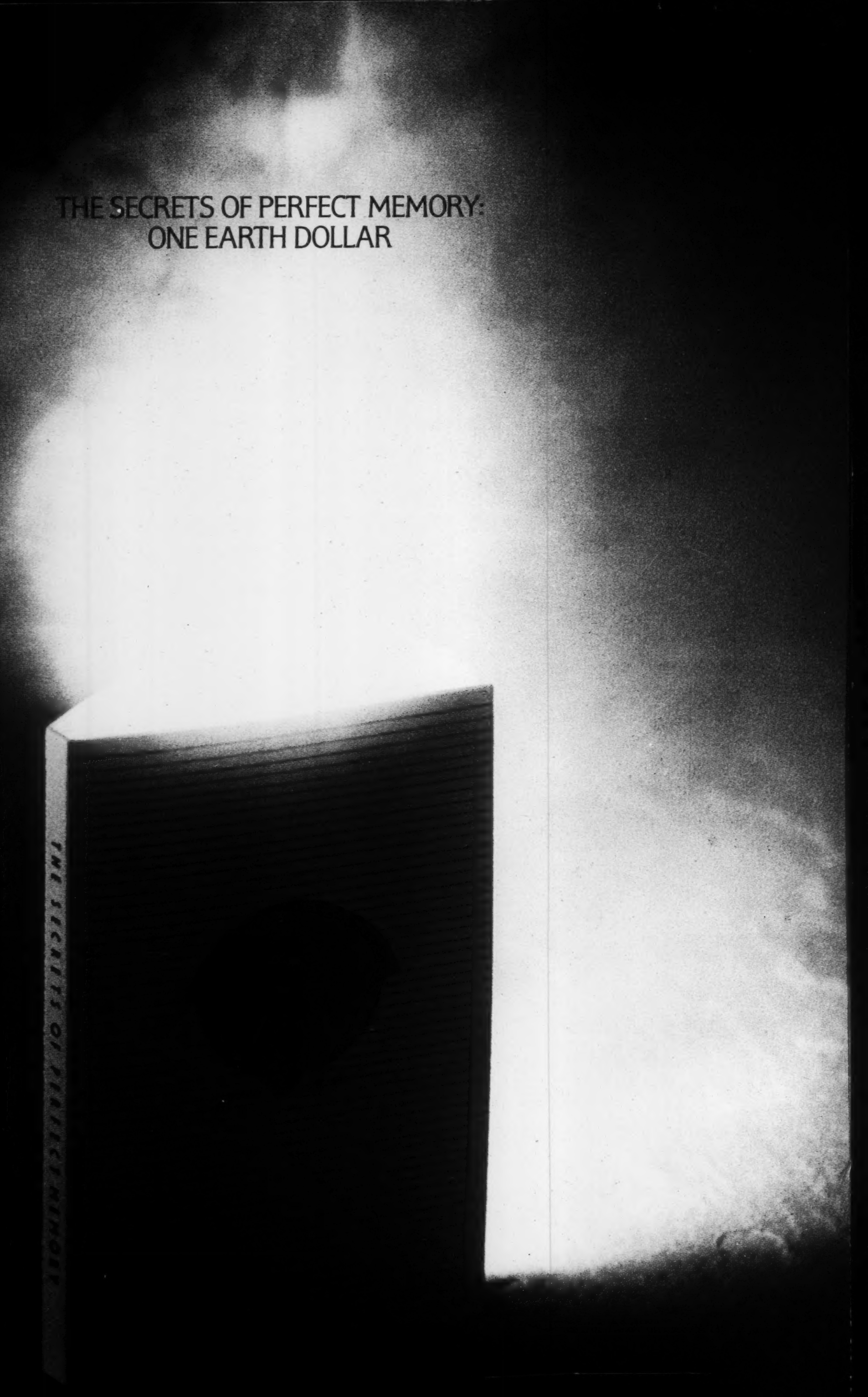

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